

**THE ASSESSMENT OF THE AGGREGATE HEALTH  
STATUS OF AN ORGANISATION**



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## ABSTRACT

As adults spend the major portion of their lives at work, it is essential that the reciprocal relationship between their work and health be recognised. In this regard, occupational nurses have an important function, through the provision of effective occupational health programmes in the workplace, although this is a challenging task and programmes often bear little relevance to health needs.

The process of identifying health needs involves the measurement of health status, requiring a clear understanding of the nature of health and how it is determined. However, conceptualisations of health in relation to work tend to be inadequate as they deal with it on an individualistic basis, often as a negative measure, do not include the various dimensions of health, and fail to take account of the influences of the wider community.

This study sets out to overcome these problems. A model of aggregate (collective) health in the workplace was developed from a conceptual framework, to explain how influences inter-relate and contribute to health in this setting. Health is conceived in positive terms, with the individual represented as the core, passing through the organisation and community, thereby depicting the inter-relationships between their health. At the aggregate level four sets of factors, human biology, environment, lifestyle and health care organisation, are shown to influence health. The subjective, objective, physical, psychological and social dimensions of health are incorporated, whilst the

potential of work as a stressor or health strengthening influence on health is recognised.

Concepts from the model have been operationalised into composites of variables, for the assessment of aggregate health status. A measurement strategy was then devised, involving the analysis of data collected by means of an examination of organisational records, interviews with key people, a survey of a random stratified sample of members, health hazard identification in the workplace and an assessment of the provision of health care in the wider community.

The survey instrument, consisting of an interview and questionnaire, was developed and subjected to a field test. The model, strategy and instrument were revised according to the results.



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## **CHAPTER ONE: INTRODUCTION**

### **1.1 Background to the study**

For many reasons South Africa must be considered a developing country, not the least of which is that from an economic point of view it is classed with many other low and middle income developing countries. Such countries have a pressing need for economic advancement and public and environmental health services to protect the health of their people, who are their greatest asset (Jeyeratnam, in Phillips & Radford, 1990), and South Africa is no exception.

In this regard, occupational health nurses have an especially important role to play. "Despite their location in workplaces [they] are concerned with the total health of working people" (Phillips & Radford, 1990, p. 68). They deal with a wide range of health problems that do not necessarily arise through work but certainly affect it. Often they are the first contact with orthodox health practitioners since many workers have no family doctor (Onyesco-Nwachuku in Phillips & Radford, 1990), and even those who do, are not necessarily receiving appropriate care.



However, to fulfil this role is a challenging task. The statements of the International Labour Organisation and the World Health Organisation in 1967, when they attributed the special health problems occurring in developing countries to "economic, geographical, climatic and ethnic factors, coupled with technical difficulties", are just as valid today. Added to these factors are the

"organisational and socioeconomic problems within the enterprise and the problems with workers with their differing personalities, values, beliefs and behavioural patterns" that combine to "impose many demands on the skills of the occupational nurse" (Phillips & Radford, 1990, p. 71). These problems are further compounded by rapid industrialisation and urbanisation which have "resulted in an immediate need for action to conserve the health of workers and ensure their safety."

At this juncture it is pertinent to consider the predominant health problems in South Africa and the manner in which health care is provided, as both influence health and health care in the workplace.

#### 1.1.1 Health care in relation to the predominant health problems in South Africa

In the past, when communicable diseases were the prime cause of morbidity and mortality, effective health care systems were based on an epidemiological perspective, termed the first epidemiological revolution, that utilised environmental control and health care services aimed at breaking the cycle of

transmission of these diseases.

However, as chronic, degenerative diseases and injuries became the leading cause of death and disability, such systems were no longer effective. In contrast to communicable diseases, these conditions "elude simple models of causality and intervention" and "build up silently and invisibly over time, to then emerge as a breakdown in the body and/or the social and physical environment" (Kickbusch, 1989, p. 265). It soon became evident that the major noncommunicable diseases and environmental hazards could best be reduced by the modification of behaviour and the prevention of environmental hazards, particularly those associated with agriculture and industry (Green & Anderson, 1986; Shirreffs, 1982; Tuomilehto & Puska, 1987). This shift in emphasis came to be known as the 'second epidemiological revolution'.

More recently, global ecological risks such as the destruction of the ozone layer, world deforestation and nuclear warfare have broadened the range of influences and risks to health, giving rise to the 'third epidemiological revolution'. In this regard, "Public health workers...have a responsibility to educate both people and governments of our planet on the nature and extent of the social and environmental hazards to human life and health, and on the measures required for their control" (Terris, in Tuomilehto & Puska, 1987, p. 597).

An analysis of the health problems amongst the people of South Africa reveals a mixed pattern typical of both developed and developing countries (MRC, 1991). It is characterised by "smoking, alcohol and other drug abuse, sexually-transmitted diseases, [and] health

hazards at work" and the chronic degenerative diseases in addition to the "health problems caused by poor or inadequate sanitation and nutrition" (Walt, 1985, p. 191). Communicable and non-communicable health problems are responsible for significant morbidity and mortality, and the country is not excluded from the global ecological risks referred to earlier. Consequently, the protection and promotion of the health of its people demands an approach that combines all three epidemiological perspectives. However, when health care efforts are examined these perspectives are not sufficiently evident. Despite the fact that one of the major approaches to health should be the modification people's lifestyle and the environment, the greatest expenditure is on curative health services. For example, expenditure on health promotion in 1990 constituted a mere 6% of total health expenditure (Medical Research Council, 1991), giving support to the observation that existing health systems expend their efforts upon "that which we wish to avoid (disease) while leaving that which everyone desires (health)" largely unattended to (Greene & Simons-Morton, 1984, p. 5).

A number of factors have influenced current systems of health care worldwide, and here again South Africa is no exception. Firstly, the advances of medical science that have decreased mortality and morbidity require increasing specialisation in the levels of health care, the provision of highly educated health personnel and sophisticated facilities and equipment. Green and Anderson (1986, p. 30) note that this type of health care, employs an "array of interventional methods, usually applied late in the natural history of disease, when little in the way of cure can be expected but much in the way of effort and

cost can be expended." In fact, the costs have risen to the extent that these services are beyond the resources of many communities.

This has been aggravated by a drop in the per capita expenditure on health as a result of rapid population growth in some countries, a worldwide economic recession and other socio-political influences, in particular marked and rapid change in societies. In South Africa such influences spawned a fragmented formal health service, with a duplication of health departments that could be rationalised neither in terms of cost nor effectiveness. As a result of these spiralling costs, communities have had to face the choice of deciding "between the best medical care for a few and the best care for the masses" (Green & Anderson, 1986, p. 30). Like many developing countries, South Africa has been lured into allocating a major portion of its health budget to specialised (tertiary) care services rather than primary health care because uninformed people measure the quality of a health care system by its degree of sophistication rather than accessibility and relevance to community needs. This emphasis on tertiary care for individuals is outmoded and wasteful.

Instead of changing the emphasis in health care planning, countries often attempt to decrease the economic burden of providing health care by various cost containment measures. In South Africa the answer was sought in the privatisation of health care on the assumption that the private sector could provide it more cheaply than the public sector. However, the "effects of this strategy have been to accelerate the flight of medical and nursing staff from the public into the private sector, and to place health care

progressively out of reach of those most in need - the poor, the indigent and unemployed." (Faculty of Medicine, University of Natal, 1990, p. 2).

To combat its health problems, South Africa needs to change its health care system so that it moves away from being basically curative to being promotive; is broad-based as opposed to focussing on individual health (Kickbusch, 1989); and it reflects a greater emphasis on behaviour and life-style with a new emphasis on the environment (Green & Anderson, 1986). In so doing, it will have taken account of the three epidemiological perspectives.

The inadequacies of current health care have also stressed the need for individuals and communities to assume more responsibility for their health so that it is relevant and acceptable. The duality of this responsibility can be explained as follows. Individuals are responsible for their own health insofar as their personal health behaviour is concerned, however the community can facilitate or impede an individual's progress towards good health. Individual ill-health can adversely affect the wellbeing of the community, whilst a community with a poor health status will have a negative effect upon the individual's health level. This reciprocal relationship was succinctly expressed when Brown said that "Like it or not, we find ourselves in a world where we are responsible for each other's wellbeing" (in Kickbusch, 1989, p. 265). The potential threat of new global ecological risks to the health of individuals and communities has underscored the accuracy of this statement. Kickbusch (p. 265) concludes that "health is a fundamental resource for the individual, the community and to society as a

whole and must be supported through sound investments into conditions of living that create, maintain and protect health."

The self-care movement has developed as a direct response of individuals accepting the responsibility for their own health, and should be encouraged by health care professionals. They can no longer afford to be prescriptive in their relationship with patients and clients. Instead a partnership must be fostered if the challenges of current health problems are to be met.

The conclusion to be drawn from the foregoing discussion is that the rising cost of health care and insufficient evidence of its effectiveness demand a new perspective. Fundamental to this is the recognition of health as an individual and social resource and a greater emphasis upon client participation and responsibility. It is against this backdrop that health and health care in the workplace should be considered.

#### 1.1.2 Health care in the workplace

Compared with other groups, the health of the working population of South Africa has not been given the attention that it deserves. It has been left to the individuals in this group to seek care for themselves in the public and private sector, depending upon their socio-economic status. More recently, some employers have assumed responsibility in varying degrees for the health of their employees, usually due to a growing understanding of the economic implications of their health status (as explained below) and



possibly exacerbated by the policy of privatisation of health care. This lack of attention has been an oversight in three major respects.

In the first place, the health status of these individuals has a profound effect upon their families, the organisation they work for, and the wider communities to which they belong. This can be explained by the significant contribution that this segment of the population can make to the socio-economic development of South Africa. Similarly, the human resources of an organisation should be regarded as its most valuable asset because organisations rely upon people to achieve their goals to a lesser or greater extent. Therefore by virtue of the reciprocal relationship between health and work, the health status of workers is extremely important. It is known that people who enjoy good health in its fullest sense will be able to function at optimum efficiency. By the same token, work which is satisfying and encourages self-actualisation will have a positive effect upon the wellness of workers, in addition to enabling them to meet their basic survival needs.

Secondly, an understanding of the health implications of technology used in work processes has been beyond most health care professionals. This has created the need for the development of a specialised body of knowledge concerning the reciprocal relationship between health and work, which is the ambit of occupational health. Whilst progress in the clinical field of toxicology has been noticeable, a great deal more research into the effects of factors in the workplace upon health at an individual, organisational and wider community level is required. These factors include the work environment in general,

work routines, the design of tools, equipment and machinery, corporate policies and strategies and organisational culture (Karisto in Rossi & Heikkinen, 1990. Multiple exposures to hazards "are considered to be one of the most difficult problems for the future" (Vuoden in Rossi & Heikkinen, 1990, p. 3). Such exposures are not necessarily confined to the workplace and together with workers' lifestyles and living conditions they compound their overall exposure to health damaging agents.

For genetic, cultural and other reasons, a great number of the workers in South Africa, like many others in developing countries, are particularly sensitive to chemicals used in the workplace. They frequently suffer from parasitic diseases, anaemia, upper respiratory infections, hepatitis A and B, and other communicable conditions. Their susceptibility is further increased by poverty, poor health care, inadequate workplace safeguards and their ignorance of workplace hazards (Barnard, and Weill, in Rossi & Heikkinen, 1990).

Thirdly, with improved education and heightened awareness of the potential health hazards of work, workers and trade unions are increasingly demanding that employers and the state recognise their responsibility regarding health protection in the workplace. Health in the workplace has rightly become an issue that can longer be ignored.

For all these reasons, the development of health care programmes which actively promote and safeguard workers' health is essential.



## 1.2 Justification for the study

In the opening paragraphs of this chapter, it was stated that occupational nurses have an important role to play in protecting and promoting people's health. This "role is increasing in importance and expanding" (Phillips & Radford, 1990, p. 85) as they often have to "shoulder the bulk of responsibilities for the health of the workers...without adequate recognition and authorisation" (Jinadu in Phillips & Radford, 1990, p. 73). In South Africa, the nurse is perceived as the most suitable health care professional to provide such programmes, with the assistance of other specialised team members. However, due to the complexity of the task nurses need to be able to "combine knowledge of the principles of nursing, public health, occupational health and effective communication, with knowledge of the workforce, the workplace, work activities and working conditions and to apply this knowledge skillfully to assess needs, determine priorities and develop programmes, in consultation with the employer, employee representatives and other health and safety colleagues (if any)" (Phillips & Radford, 1990, pp. 73 and 74).

In order to provide effective occupational health programmes, the occupational nurse's role and emphasis in practice has changed in response to the same factors influencing health care for the general population, that were discussed earlier. This change is illustrated in Figure 1.1, where it can be observed that as the role has developed with the growth of professionalism, health care in the workplace has become comprehensive and promotive oriented, focussing on work and all the members of the organisation (or community).

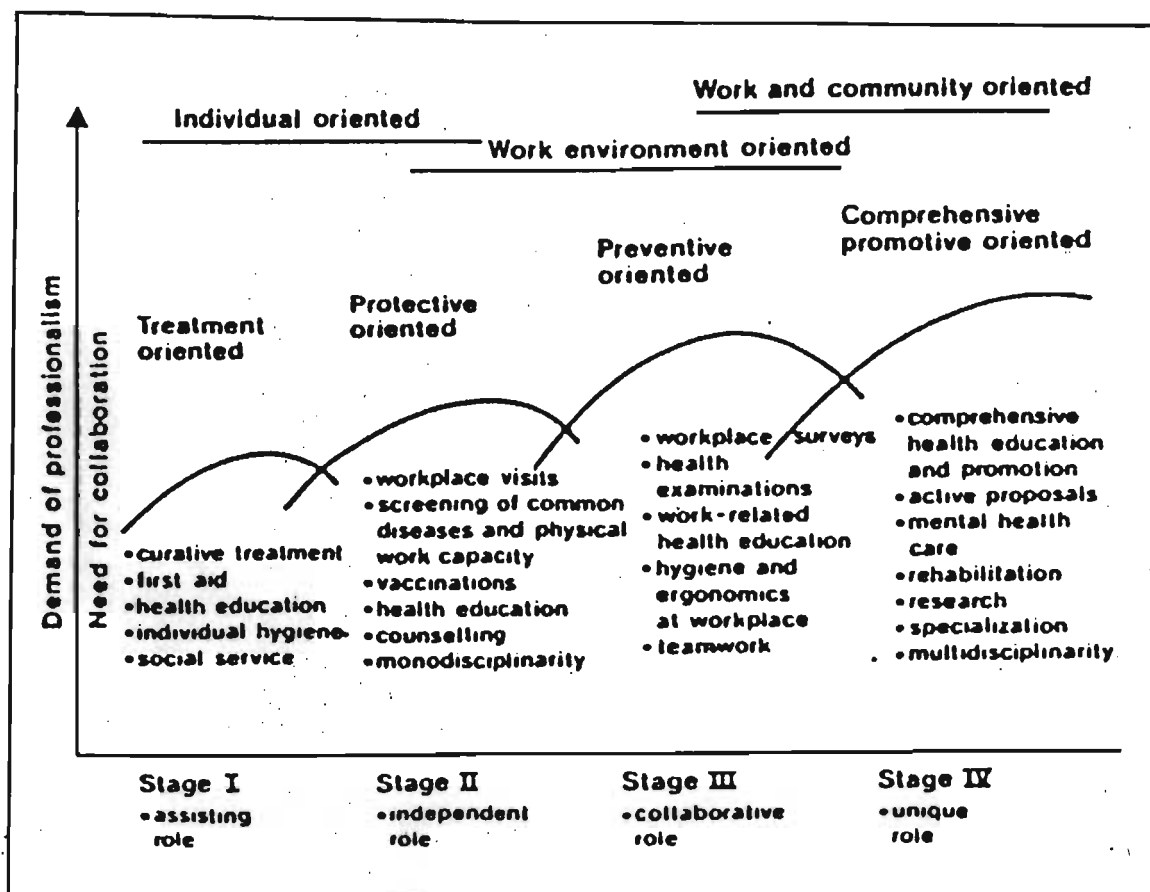


Figure 1.1: The role of occupational nursing in relation to the development of professionalisation and collaboration (Phillips & Radford, 1990, p. 18)

The problem that most occupational nurses face is how to formulate effective health programmes that are in keeping with the changes mentioned above and so will provide for the needs of workers, especially in view of the limited resources at their disposal. Many of them lack specialised or relevant education for this aspect of nursing and require radical re-orientation to be able to function in a health care setting that is vastly different to others. Research into occupational nursing in developing countries has been minimal and is urgently needed "...to ensure that needs are being fulfilled appropriately for employers, and clients and

in order to increase the professionalisation of occupational health nursing" (Phillips & Radford, 1990. p. 85). Finally, wide ranging legislation aimed at protecting the health of people in the workplace will become effective in 1994. It is likely that this will result in greater pressure being placed on occupational nurses by employers to ensure that their health programmes are effective, so increasing their burden.

In answer to these problems, this study sets out to develop an effective strategy for the determination of health needs in the workplace, taking account of the diversity of influences upon health status, and is accordingly considered to be justified.

### 1.3 Statement of the research problem

Experience in the practice and teaching of occupational health nursing prompted the researcher to conclude that existing approaches to the assessment of health in the workplace are inadequate and that a more effective strategy should be developed in order to provide effective occupational health care programmes. Principally, this inadequacy has resulted from a limited conceptualisation of health in the workplace upon which these approaches have been implicitly or explicitly based. Their shortcomings include:

- \* the measurement of health status at individual rather than aggregate level, thus neglecting the social nature of the organisation;
- \* a failure to take into account the influences on health status that include the interaction between the members of an organisation, the organisation

and the wider community;

- \* the adoption of a negative measure of health, which is essentially a curative model of health, that erroneously assumes that the absence of disease equals health;
- \* a focus on the objective dimensions of health to the exclusion of the subjective dimensions;
- \* an emphasis upon the physical dimension of health to the detriment of the psychological and social dimensions; and
- \* insufficient recognition of the opportunity for self-actualisation and fulfilment that work can afford.

Therefore, a comprehensive conceptualisation of health in the workplace, that addresses these inadequacies, must be developed to guide the assessment of health needs.

#### **1.4 The research purpose**

The purpose of the research is twofold. In the first place, to develop a comprehensive model of health in the workplace. Secondly, to devise a strategy for the determination of the aggregate health status of an organisation (workplace), based on the model. It is intended that the strategy be used by the occupational health nurse to assess health needs in the workplace, in order to ensure effective health care programme planning and provision.

### 1.5 The research objectives

In terms of the research purpose, the research objectives are to:

1. clarify concepts relating to health;
2. use these concepts to construct a conceptual framework of health with particular reference to the organisation or workplace;
3. develop a model of aggregate health in the organisation (workplace) from the conceptual framework;
4. investigate the approaches and methods used in the measurement of the health status of an individual, an organisation, and a community;
5. operationalise the concepts from the model into composites of variables to enable their measurement;
6. devise a strategy for the measurement of health in the workplace, based on the model of health and the selection of an appropriate approach and method; and
7. test the model and strategy and refine or modify them accordingly.

## 1.6 Outline of the thesis

The achievement of these objectives requires an extensive literature review that will be contained in the following four chapters. Chapter Two will examine the meaning of health and Chapter Three will deal with lay perceptions of health and illness. Later in the study, concepts from these two chapters will be selected to construct the conceptual framework and a model of aggregate health in the workplace. In addition, some variables for the measurement of health status and the establishment of health needs will be identified from Chapter Three.

Chapter Four will analyse the influences on the health of the organisation and its members, derived from a review of relevant literature and categorised according to the four factors of the health field. The purpose of this chapter will be to provide a detailed explanation of the nature and interaction of these influences, to support the model and enable the operationalisation of concepts into variables for measurement.

Approaches and methods used in the measurement of health status and health needs will be investigated in Chapter Five.

Chapter Six will describe the development of the conceptual framework and model of aggregate health status in the workplace from the literature review and then suggest how health may be measured in terms of these.

The research methodology for the development and field test of a survey instrument, that forms part of

the strategy for measuring health in the workplace, will be explained in Chapter Seven.

Chapter Eight will contain an analysis of the data collected from this field test.

Finally, in Chapter Nine the findings of the field test will be used to evaluate and refine the model, strategy, and instrument, culminating in recommendations for their use.

[Note: In various places throughout this study the occupational health nurse will be referred to in the feminine rather than writing "he or she" each time, although it is recognised that there are a great many male occupational health nurses.]

## **CHAPTER TWO: THE MEANING OF HEALTH**

The measurement of health rests upon the formulation of an adequate definition of health. The latter task is difficult and yet worthy, because "health is a focal point in almost all conceptual and theoretical frameworks in nursing" considering that the goal of nursing is the promotion of health (Pender, 1987, p. 15). "To address the promotion of health, one must know what the desired outcome - health - is and how its achievement will be measured at individual, family, and community levels" (p. 35). To this end, a number of concepts have been explored to develop a model of aggregate health upon which a strategy to determine the health status of an organisation could be based.

### **2.1 Dilemmas in understanding the concept of health**

In discussing health, Pender (1987, p. 35) posed the following questions to illustrate the dilemmas that require explanation. The answers to these questions are basic to the understanding of the concept of health and will be used to develop the conceptual framework for the study.



- "1. Is health a separate and distinct concept from illness or is illness subsumed within the broad concept of health?
2. Does health represent a state to be attained or an ongoing dynamic process throughout the life cycle?
3. Are health and wellness the same or different constructs?
4. Is the definition of health universal or culturally specific?
5. Is health a multilevel concept applicable to individuals, families, communities, and societies?"

## 2.2 The evolvement of health as a concept

A brief review of the evolving concept will address Pender's second question and serve as a backdrop to the development of a model of aggregate or community health.

Dolfman (cited in Greene & Simons-Morton, 1984, p. 6) traced the changes in the meaning of health and found that it has moved through a full circle, from being a general term to becoming narrow and now returning to a broader concept. He states that the word health appeared in English about 1000 A.D. and referred "to the quality of soundness and wholeness in a very broad sense." It encompassed physical, mental and spiritual dimensions. However, as the scientific knowledge of disease causation in physical terms grew, the concept lost the other dimensions. This is evident in the health care policies of the nineteenth century that were effective in controlling communicable diseases and so reducing mortality rates. The concept of health underlying these policies was essentially a disease model, whereby mortality and morbidity indices

were used to measure the level of health in a given population. Thus, the absence of disease inferred health. In reality they were measures of disease not health. Some authors refer to this as a biomedical model of health. A number of developments, outlined below, have led to the realisation that this model required redefinition.

The stabilisation of the death rate has meant that traditional indices are no longer sensitive enough to measure differences in some populations. Although people are not dying at the same rate as before, they are not necessarily more healthy. Improved methods of prevention and early detection of illness have meant that changes in health can be identified long before disease is evident, and these are not reflected in mortality and morbidity indices. Technological and scientific advances have resulted in increased leisure time with an emphasis on the aesthetic dimensions of existence and these dimensions cannot be accommodated in the traditional model. Finally, the encouragement of an ethic of individual and social responsibility for health with its concomitant stress upon prevention, and the contribution of the social sciences to the understanding of disease demand that lay perspectives be incorporated into the conceptualisation of health.

Regarding the latter, biology and sociology have previously been characterised as occupying two extreme poles of thought in disciplinary terms, "both very wary of each others subject matter" (Kickbusch, 1989, p. 266). However, the work of social scientists has emphasised the human dimension in disease causation and the promotion of health to the extent that it has been recognised that biological, psychological and social factors are intimately connected. In fact, this

dimension is so important that Meyer and Sainsbury (1975, p. 7) went so far as to say that "the health status of an individual becomes meaningful only in terms of his human environment, ie., his social and cultural milieu." To illustrate this, Toumilehto and Puska (1987, p. 592) conducted a study into cardiovascular diseases and found that the risk factors for these diseases were "largely determined by social forces and environmental factors." Therefore, the improvement of cardiovascular health would only come about with multisectoral responses in which several sectors co-operate at a local level. This is easier to achieve than "at a higher level of various organizations and especially among different scientific disciplines" where boundaries are very strictly defined thereby presenting "a major obstacle to the actions necessary in disease prevention." Thus the jealous protection of 'territories' by the various disciplines is outmoded. It has to be accepted that the boundaries are blurred (Otite, 1987) and there must be an integrated approach which involves "the development of a partnership between health and social scientists, the integration of services, and the use of health care teams, including people without formal training' (Meyer & Sainsbury, 1975, p. 56).

Engel (cited in Fitzpatrick, Hinton, Newman, Scambler & Thompson, 1984, p. 5) argued for this integration when he proposed that "the biomedical" model of health must be radically supplemented to become a "biopsychosocial model" incorporating social, psychological, and behavioural dimensions. He says that one way of achieving integration is by using a systems approach, whereby health is viewed in terms of "several hierarchically organised levels or subsystems from the cell through levels such as the person, the

family and ultimately society." This approach will be incorporated into the model of aggregate health status.

In 1947, the World Health Organisation defined health as "a state of complete physical, mental, and social well-being and not merely the absence of disease and infirmity" (cited in Greene & Simons-Morton, 1984, p. 7). This definition signified a drive for the acceptance of health as a positive state as opposed to the absence of disease. Pender (1987, p. 17) notes that whilst this frequently quoted definition "addresses the complexity of health" it is "difficult to deduce from it the criteria for recognising health as a positive human experience." Importantly, it:

- "1. Reflects concern for the individual as a total person rather than the sum of parts
- 2. Places health in the context of the environment
- 3. Equates health with productive and creative living."

These features will be fundamental to the conceptual framework.

More recent definitions of health have strived to incorporate these aspects. They may be classified into three major groups (Pender, 1987; Greene & Simons-Morton, 1984). The first category contains definitions that emphasise health as an adaptive process and are based on the work of such people as Dubos, Aubrey, Parsons, Neuman and Roy (cited in Pender, 1987). Essentially, they are normative definitions which equate health with the ability to adapt to internal and external stressors. Thus, health is achieved when the parts function in equilibrium. "A major problem with normative definitions of health is that they predict 'what could be' based on 'what is', leaving little room

for incorporating growth, maturation, and evolutionary emergence into a definition. A norm represents average or middle-range effectiveness in human functioning" (Pender, 1987, p. 18). Greene and Simons-Morton (1984) also note that the criterion of adaptability on its own is rather negative and limited as health is equated with the ability to endure difficult experiences. However, they point out the useful time perspective that these definitions include. Therefore, being healthy means functioning well at the present time in addition to being able to cope with future threats.

The second group of definitions focus on actualisation, or the "realization of human potential through purposeful activity" as Dunn expresses it (cited in Pender, 1987, p. 21). He was one of the main proponents of these theories, coining the term 'high-level wellness', with the following three components:

- "1) progress in a forward and upward direction toward a higher potential of functioning,
- 2) an open-ended and ever-expanding challenge to live at a fuller potential, and
- 3) progressive integration or maturation of the individual at increasingly higher levels throughout the life cycle."

He stressed that the environment, which is constantly changing, will determine health. Other theorists whose work is included in this category are Hoyman, Orem and Newman (cited in Pender, 1987).

The third category of definitions seek to combine stability and actualisation. Pender (1987, p. 27) proposes such a definition:

"Health is the actualization of inherent and acquired human potential through goal directed behaviour, competent self-care, and satisfying relationships with others while adjustments are

made as needed to maintain structural integrity and harmony with the environment."

### 2.3 The concept of positive health

Pender questions whether health and wellness are the same constructs. Essentially, the notion of wellness was introduced to emphasise the positive state of health as opposed to passive health or equilibrium as referred to in the definitions focussing upon adaptation (Dunn, cited in Greene & Simons-Morton, 1984). Dunn defined high level wellness as "An integrated method of functioning which is oriented toward maximizing the potential of which the individual is capable. It requires that the individual maintain a continuum of balance and purposeful direction within the environment where he is functioning" (cited in Pender, 1987, p. 21).

In line with many others, Greene and Simons-Morton (1984, p. 20) have noted that despite the fall in mortality and morbidity rates, "the quality of life of people measured in terms of mental and social well-being does not appear to be making any significant progress and may be declining". They cite Burt who commented that people often lack positive goals and "have little to be healthy for". Thus, health as a positive concept requires that satisfaction and actualisation is derived from the process of living. Wellness embodies this notion. It is not only the absence of injury, illness and infirmity, but also "a state of positive well-being for the body, mind and spirit" (Drury, cited in Barick & Jones, 1978, p. 665). Further to this, "Health must not be looked upon as an end in itself, but should be a means or a tool to achieving betterment of life" (Meyer & Sainsbury, 1975,



p. 57). So in essence, positive health implies good quality of life.

#### 2.4. Comparison of the concepts of health, illness and disease

In answer to the first question posed by Pender, it is important to differentiate between health, illness, and disease as these terms are often used loosely and inappropriately. Eisenberg (cited in Fitzpatrick et al., 1984, p. 13) explains that "patients suffer 'illness'; physicians diagnose and treat 'disease' ....illnesses are experiences of disvalued changes in states of being and in social function: diseases are abnormalities in the structure and function of body organs and systems." Therefore, disease is a medical concept based upon pathological abnormalities whilst illness is a subjective interpretation of health-related problems. Consequently, "they do not stand in a one-to-one relationship as it is quite possible for individuals, on the one hand, to have disease without defining themselves as ill, and on the other, to define themselves as ill without having a disease" (Fitzpatrick et al., 1984, p. 33). By the same token, it is possible for a person to exhibit health in the presence of disease, based on their efforts towards actualisation and stabilisation. Similarly, Milton Terris identified two important aspects of health: "one subjective and the other objective. The subjective relates to feeling well, the objective aspect to the ability to function" (cited in Greene & Simons-Morton, 1984, p. 10).

Pender believes that "health and illness are



qualitatively different but interrelated concepts" (1987, p. 29). She explains that if health and illness are represented on a continuum, difficulties in describing manifestations of health in the ill person arise. For this reason, she depicts differing levels of health in interaction with illness, with illness occurring as "discrete events throughout the life process of short or long duration" (1987, p. 29), as shown in Figure 2.1. These illnesses can interfere with or promote a person's search for health. Therefore, she feels that it is possible for optimum health or poor health to be present with or without overt illness.

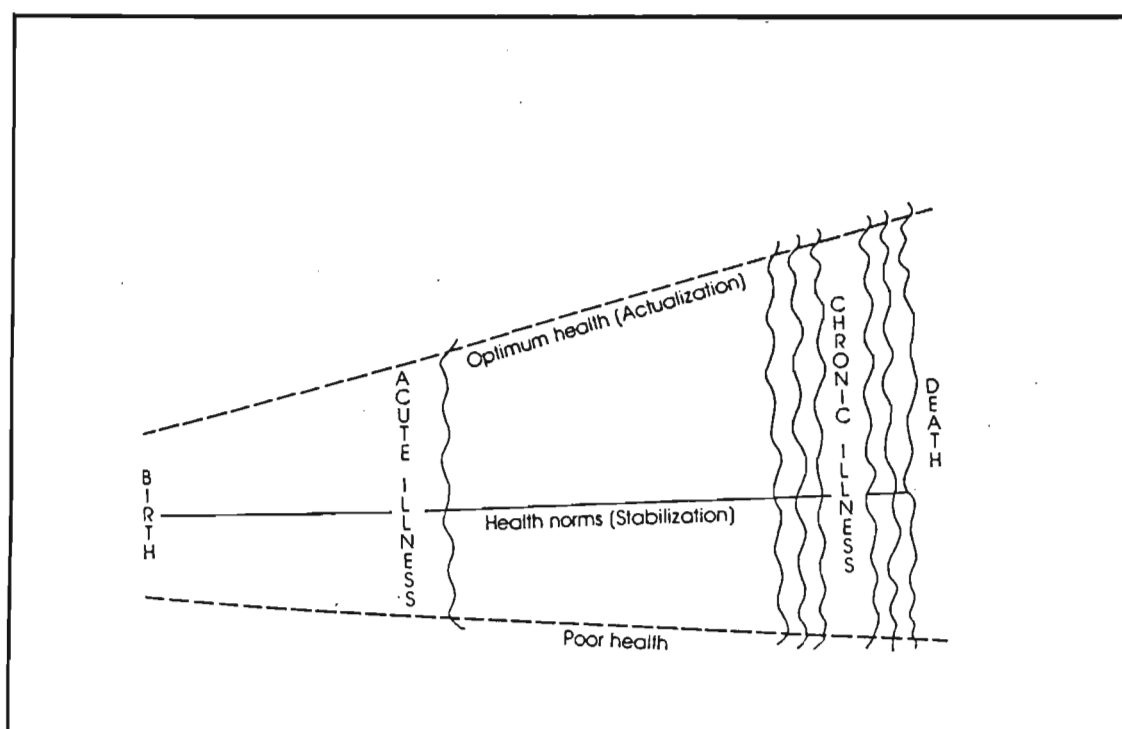


Figure 2.1: The health continuum throughout the lifespan (Pender, 1987, p. 29)

For example, a woman with well-controlled hypertension who is functioning effectively and experiencing high level wellness within the limitations of this chronic illness, could still be plotted on the optimum health level. Essentially then, the assessment is made within the context of the particular person under consideration and his or her limitations and not against some ideal standard of optimum health. The researcher contends that Pender is using illness and disease interchangeably, hence the difficulty in representing an individual with a chronic disease who shows healthy functioning on the same continuum.

Uys and Mulder (1991) deal with this issue by differentiating between illness and disease. They represent disease and health at either end of a continuum (Figure 2.2). The person with hypertension in the example above would be categorised towards the disease end of the continuum. However, because she was well controlled and functioning effectively she would be placed in the well category on a continuum representing wellness and illness (Figure 2.3).

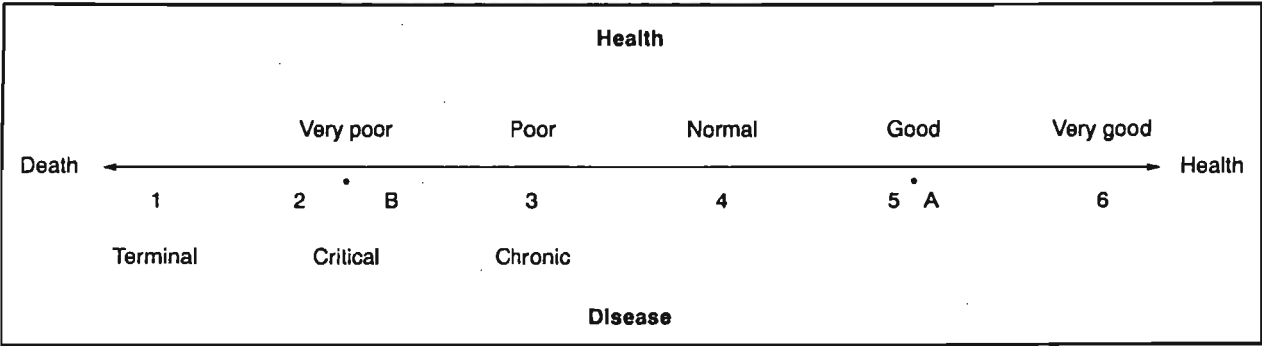


Figure 2.2: The disease-health continuum (Uys & Mulder, 1991, p. 15)

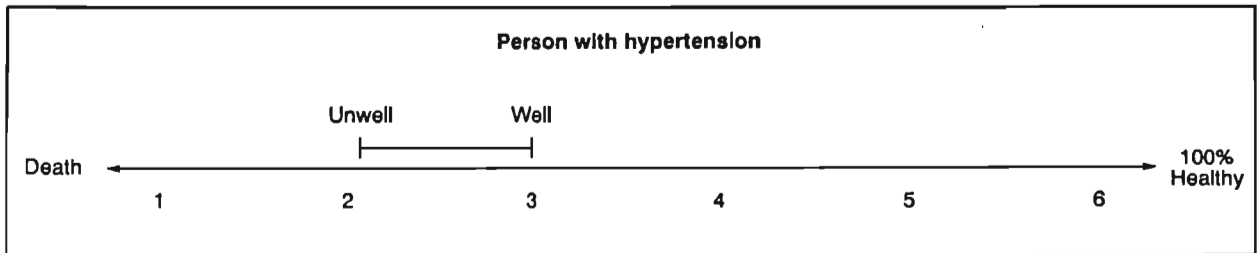


Figure 2.3: The illness-wellness continuum (Uys & Mulder, 1991, p. 15)

This discussion will be pursued further in Chapters Three and Five.

## 2.5 The concept of community health

### 2.5.1 Individual as opposed to aggregate health

In her fifth question, Pender asked whether health was a multi-level concept, applicable to individuals and groups. All the definitions discussed thus far, with the exception of the reference to Engel (2.2), have focussed upon the individual. However, there is much evidence in the literature to support the statement by Noack that "the health of an individual is phenomenologically and conceptually different from the health of a social group or population" (1991, p. 91). Definitions are found to differentiate between and progress from the health of the individual, to family

health and then to community health. Therefore, the concept of aggregate health as opposed to individual health is introduced.

An examination of theories of community health reveals that they are often based upon the dimensions of a community. In order to identify these dimensions, it must be remembered that society is organised into groups or communities on the basis of interdependent and inter-related social systems or units. These social systems, or patterns of organisation as some people prefer to call them, may be defined according to their shared characteristics or interests such as spatial boundaries, functions and goals (Clemen, Eigsti, & McGuire, 1981; Klecowski, Elling & Smith, 1981). The concept of a community as a social system "encourages a contextual view of individual or group behaviour" (Broom & Selznick, 1968, p. 15). Pender defines the community as a locality-based entity, composed of systems of formal organizations reflecting societal institutions, informal groups and aggregates that are interdependent, and whose function or expressed intent is to meet a wide variety of collective needs" (1987, p. 31). Therefore, she identifies the spatial, personal and functional dimensions of a community.

Similar to definitions of individual health, definitions of aggregate health vary from being disease oriented to placing emphasis upon actualisation.

#### 2.5.2 Holistic models of community health

Many of them are holistic models of health. By way of explanation, holism is described as a "philosophical perspective in which all the

characteristics of people and their environments are interrelated and to some degree inseparable" (Burns and Grove, 1987, p. 5). Cmich (cited in De Leeuw, 1989, p. 1285) identifies the following four principles of holism:

- "(1) Entities and systems in the universe exist as unified wholes.
- (2) The parts of a whole are dynamically interdependent and inter-related.
- (3) A whole cannot be understood by the isolated examination of separate parts.
- (4) Therefore, the whole is greater than the sum of its parts."

An example of an holistic model of aggregate health is given by Pender (1987, p. 32) who states that "Community health is more than the sum of the health states of its individual members; it encompasses the characteristics of the community as a whole."

Holistic models of health are dynamic, multi-dimensional and complex, and by implication present difficulties for research as measurement will never reflect the complete picture. Greene and Simons-Morton (1984, p. 10) note that "Because of the interrelatedness of its components, it is difficult to develop a precise list of factors to which most persons will agree". In fact, some will oppose such a list on the grounds that health is "a tightly integrated gestalt, a term which refers to the development of a unique entity with an existence of its own, as opposed to loose collection of components." Their concern is that the process of identifying dimensions will result in the loss of gestalt. However, as Greene and Simons-Morton go on to argue, recognising dimensions is not the same as reducing it to components. Unless dimensions are identified it will not be possible to determine needs.

Dever (cited in Pender, 1987, p. 31) attempted to address this problem when he recommended that the following four attributes of a community could be assessed in order to determine community health:

- "1) Environment - fetal, physical, sociocultural, education and employment milieu
- 2) Population behaviour and life style - self responsibility, self-care competency
- 3) Human biology - genetic characteristics of population
- 4) Systems of health care - prevention, cure, and rehabilitation."

These attributes are based on the four factors of the health field, derived from the work of LaLonde. He was one of the health workers engaged in the second epidemiological revolution, referred to in 1.1.1, who realised the significant contribution of life-style to the development of chronic diseases and injuries, thus requiring a different strategy to that used in the first epidemiological revolution (Green & Anderson, 1986; Shirreffs, 1982). LaLonde proposed the 'health field' concept, according to which all possible influences upon health status could be classified under four headings or factors, these being human biology, environment, life-style and health care organisation. The contention was made that health care workers should focus on life-style modification to improve the health of people. These four factors will be essential components of the conceptual framework of this study.

### 2.5.3 Ecological models of community health

LaLonde's health field concept also represents an ecological model of health. An ecological view of health considers inputs and outputs at every level (De Leeuw, 1989). Such models take cognisance of "the

interdependence between human beings, their health, and their physical and social environments." Thus, they stress 'not only the mind/body/spirit interaction that constitutes human health, but relate human health to the wider notion of an ecosystem" (Kickbusch, 1989, p. 265). In addition, Kickbusch (1989, p. 267) states that "For an ecological theory of health a key step would lie in understanding health as a pattern of relations rather than as a quantitative outcome". Bateson (cited in Kickbusch, 1989, p. 267) notes that the pattern is not fixed but "primarily a dance of interacting parts and only secondarily pegged down by various sorts of limits which organisms characteristically impose." These statements establish the link between holistic and ecological models of health. In fact, De Leeuw contends that the two notions are essentially the same, arguing that the term ecosystemic may be preferable, due to the changing concept of ecology which is taking on ideological connotations in some quarters. These perspectives also emphasise the need to understand health from a biopsychosocial perspective, to accept that it is dynamic and underscore the importance of natural and social scientists working together.

#### 2.5.4 The social dimension of community health

The need to recognise the social or human environment as a dimension of community health was emphasised by Kickbusch who called for broader approaches to health policy "that incorporate a social model of health, make the healthier choice the easier choice and to improve the social climate for health" (1989, p. 266). In the researcher's opinion this is extremely important. As was explained in Chapter One, the promotion of a healthy lifestyle and an environment



conducive to health hold the potential for lowering morbidity and mortality rates and improving the quality of life. However, unless the social climate facilitates these, individuals and communities will not be successful in achieving health. In support of this, Etzioni (1977) stressed the importance of societal factors in setting health hazards and ill health temptations and in shaping the ability of individuals to cope with them. He noted that people who are obese, suffer from coronary heart disease or alcoholism are frequently thought to be weak-willed. However, he contends that society can make it difficult for people to overcome such problems and that medical regimens make it difficult for them to comply with the suggested patterns of behaviour. He also describes how society can adopt a strongly moralistic attitude to health whereby it behoves its members to act in a health promoting manner. Parsons also raises this issue when he proposes his work performance and sick role theory (cited in Jaco, 1960). These perspectives accord with the observation made in the background to the study (1.1.1) that health is an individual and social responsibility. Wilson (cited in Ewles & Simnett, 1985, p. 6) puts this most succinctly when he says that health cannot be possessed - "It can only be shared." Thus health is an individual and community resource. These issues will be discussed further in Chapter Four.

#### 2.5.5 Definitions of community health - universal or culture specific?

Pender asked whether the definition of health was universal or culturally specific. This question has already been addressed in a number of places in the foregoing discussion where it has become apparent that health is definitely culture specific. For example, it

was noted earlier that the health status of an individual becomes meaningful only in terms of his cultural environment (Meyer & Sainsbury, 1975). Many other authors have supported this perspective, for example Maclachlan (1960) and Fitzpatrick et al. (1984) and it will be discussed in more detail later in the literature review (3.4.2).

#### 2.5.6 Green and Anderson's model of community health

Green and Anderson (1986, pp. 26-27) proposed a model of community health that will form the basis of this study's conceptual framework. It was not used in its entirety as the researcher felt that there were some basic shortcomings in it and these will be noted in describing the model. Central to their model are Lalonde's four factors of the health field. They describe each of these as follows:

\* Human biology - "encompasses the health outcomes that directly derive from the biology of humans. The genetics of the individual, natural growth, and ageing are examples. Human biology is a necessary substrate for the remaining three categories, but there is little that individuals or communities can do to alter it except through counselling." The researcher takes issue with this view as there is much that can be done to alter it. The lifestyle of individuals can hasten the ageing process and affect the genetic makeup of their offspring just as the environment can similarly determine the health of the unborn child.

\* Environment - "includes all those factors related to health that are external to the human body and over which the community may have a larger degree of control." Safe water, food and air and a beneficial

social environment are examples.

\* Life-style - "covers decisions by individuals that affect their health, including self-imposed risks such as cigarette smoking, overeating, drug misuse, alcoholism, promiscuity, careless driving, and the failure to wear seat belts. Lack of exercise, recreation, or relief from pressure of work or other stressors are further examples."

\* Health care organisation - the provision of medical services, the elements being "medical practice, nursing, hospitals, nursing homes, dental services, drugs, mental health care, and other community services." The researcher believes that this category should be broadened to place greater emphasis upon all the services or organisations in the community that can exert an influence on the health of its members. Thus, the effects of housing, education, transport, and such like on health would be recognised and the need for intersectoral co-operation highlighted.

Green and Anderson depict community health as being composed of a natural history of health in which these four factors operate (Figure 2.4). They explain that the natural history of health has operated from primitive times. Human biology and the environment in combination, influence health and behaviour. In addition, behaviour influences health, and if this is a positive influence it results in improved health thus enabling people to adapt to the challenges of life. Successful adaptation in turn closes the cycle by reinforcing the behaviour which exerted the positive influence, so that with the passage of time these become health practices which are passed on to succeeding generations. Social organisation is not

essential for this to occur.

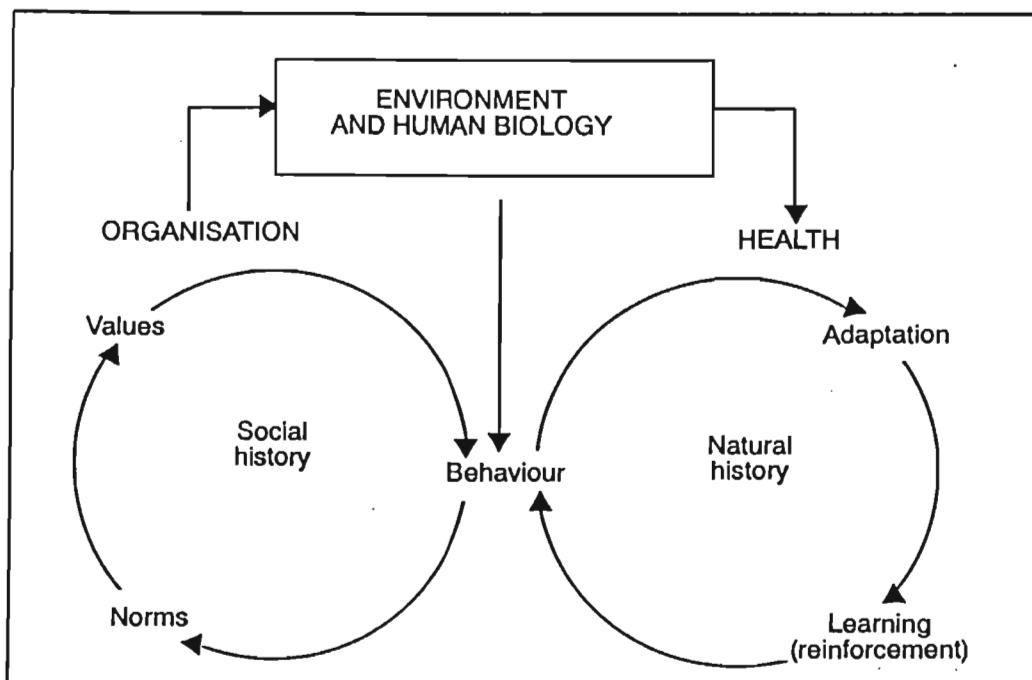


Figure 2.4: Green and Anderson's model of community health (1986, p. 29)

With the formation of communities, a social history of health is imposed upon the natural history of health. Members of the community disseminate information about health practices amongst themselves which results in behaviour becoming more organised by means of expectations and social influence, leading to the development of norms. These norms become cultural values over time and they in turn shape the purpose and methods of social organisations. Some social organisations attempt to control the environment and thereby exert an influence over health. "The behavioural and the environmental controls exercised by community organisations include behaviour related to

health and environmental factors related to health" (p. 28). Thus human organisation becomes the fourth influence on the natural history of health. In essence, this model conceives health as adaptation to the challenges of life and is therefore an ecological model. It does not incorporate actualisation or growth and development. The researcher contends that the schematic representation should not depict human biology and environment together as they do not necessarily act in unison to influence health. Also, behaviour can exert a direct influence upon the environment. Green and Anderson later portray the influence of health behaviour and lifestyle slightly differently, and yet more accurately in the researcher's opinion. (See Figure 2.5.)

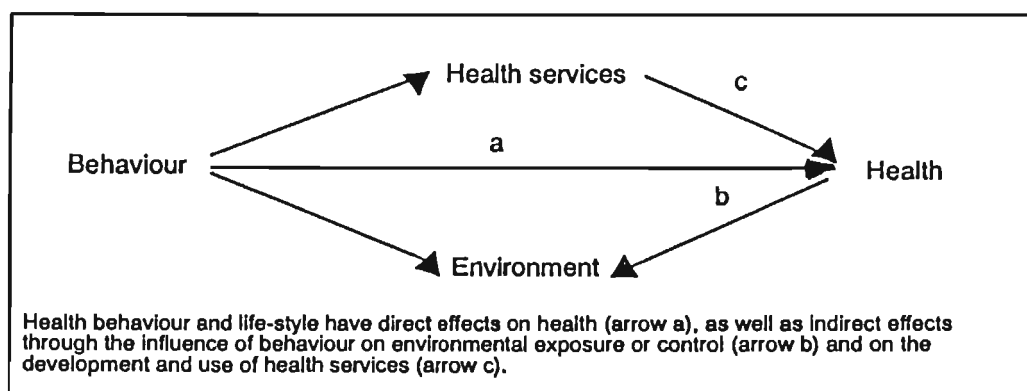


Figure 2.5: Green and Anderson's portrayal of the influences of health behaviour and lifestyle on health (1986, p. 75)

In the natural history of health, behaviour and

lifestyle can influence health directly in the form of risks and benefits. In the social history of health, behaviour indirectly influences health through social norms, culture, organisation, and environment. Behaviour can influence health indirectly to the extent that individual and community actions are planned to change the environment in terms of environmental exposures or control. Furthermore, behaviour influences health indirectly through the health services insofar as the community determines and supplies "services through individual and community action in the legislative and planning process", utilises services timeously and appropriately and complies with prescribed regimens (p. 76). It must be noted that the social environment through group norms and values, can in turn influence behaviour and so indirectly influence health as well. This is not clearly shown in Figure 2.4. (See 4.3 for further discussion.)

The authors explain that the environment is physical, chemical, biological and social. However, they do not adequately show this in their model as they have placed norms and values, in other words the social environment, outside of environment on the diagram.

A final criticism of the diagrammatic representation is that it does not reflect health as the central goal, but appears to give organisation, environment and human biology equal status.

The four factors of the health field, as outlined by Green and Anderson are derived from LaLonde's work and will be used in the model of health in the workplace.

## 2.6 The concept of health in the workplace

As one of the main objectives of this study is the determination of health in the workplace, it is essentially a study concerned with the field of occupational nursing. An investigation of the definitions of occupational health revealed that in the past they tended to deal with health on an individualistic basis and were too narrow as their main emphasis was upon the reciprocal relationship between work and health, without taking account of the broader dimensions of health that other theories offer.

One such approach to defining occupational health is that proposed by Deubner (1987). He conceptualises it on the basis of its subjective and objective dimensions, as well as emphasising the reciprocity of work and health. Although it is commendable for the inclusion of the two dimensions it does not consider health in the workplace from an aggregate perspective.

However, this does appear to be changing. Following a conference in Finland in 1988 where the subject of conceptual frameworks in occupational nursing was discussed, Alston (cited in Rossi & Heikkinen, 1990) determined that there was consensus on four points to be included in a conceptual framework. Firstly, it is necessary to perceive employees in their total environment, which would include the workplace and their general living environment. Secondly, the work environment is influenced by economic, political, social, ecological, organisational and legislative factors that are internal or external to the work environment. Thirdly, the interaction between the worker and his environment was emphasised. Lastly,



health can be influenced by attitudes, values and behaviour of the individual and personal and organisational culture. Therefore, the influence of the wider community on health in the workplace is conceded. All of these points will be included in the study's conceptual framework.

Rossi and Hekkinen also note that nurse theorists such as King, Rogers and Roy have emphasised the importance of changing the environment to improve or promote health. Conceptual frameworks that recognise man in relation to his environment "usually deal with adaptation and roles, active participation and healthy ways of living, the reduction of risk factors and behaviour modification" (1990, p. 25). They concluded that further study is required to establish whether these frameworks are applicable to occupational nursing. The conceptual framework for this study will incorporate these aspects and demonstrate their applicability to this field of nursing.

## 2.7 Conclusion

The conceptualisation of health is a complex and difficult task, as the five questions posed by Pender have illustrated. In seeking the answers to these questions a conceptual framework (Chapter Six) for this study has been formulated that is based upon the following assumptions: health and illness are interrelated concepts; health is an ongoing dynamic process involving adaptation to the challenges of life and maximization of potential; wellness is essentially a state of positive health; definitions of health are culturally specific; and health is a multilevel concept. The influence of the social environment on

the health of the community has been stressed, as has the importance of viewing the health of the community from an ecological perspective. Further, health is depicted as a multidimensional yet holistic process where the health behaviour and status of individuals and communities is inter-related. However, in the words of Pender (1987, p. 28) "Until holistic phenomena have been identified that can be measured with some degree of reliability, a composite biopsychosocial approach to defining and assessing health is needed." This study will adopt such an approach in developing a conceptual framework and a strategy for measuring health in the workplace.

### **CHAPTER THREE: LAY PERCEPTIONS OF HEALTH AND ILLNESS AS DETERMINANTS OF HEALTH AND HEALTH-RELATED BEHAVIOUR**

An examination of the concepts relating to health in Chapter Two indicated the need for the recognition of the subjective, social and psychological dimensions of health. These dimensions largely relate to the perceptions of lay people to health and illness. This chapter contains a detailed discussion of how they influence health and health behaviour. They are important in view of the fact that this study ultimately aims to develop a strategy for measuring health and identifying health needs so that occupational nurses can provide effective and appropriate occupational health programmes.

Lay perceptions colour people's attitudes to health, their understanding of the nature and causes of ill-health, their life-style and their utilisation of formal and informal health care services.

#### **3.1 The complexity of lay concepts of health and illness**

There is no doubt that concepts of health and

illness vary greatly between people, and that they will influence health-related behaviour equally variably (Calnan, 1988; Counte & Christman, 1981; Fitzpatrick, Hinton, Newman, Scambler & Thompson, 1984). This variability in part accounts for the dynamic and inter-related nature of health. Counte and Christman (1981, p. 5) attribute it to the fact that lay perceptions of health "are based not on professional training but on an admixture of folk beliefs, mass media assertions, spiritual beliefs, and lay understanding of scientific modern medicine." Baumann (cited in Counte and Christman, 1981) conducted an extensive study to establish how lay people define health. Her results suggested that health is a multi-dimensional concept for them, with several criteria being used, including how they feel, the absence of symptoms and their ability to perform social roles. She also established that there are socio-demographic correlates with conceptions of health. For example, people with more education tend to pay more attention to symptoms.

The experience of being ill is limited in that it is usually unpredictable, unplanned and undesirable and therefore an ill person is generally "a neophyte in the role" (p. 6). Such a situation is actively promoted by society (see 3.4.2.4). Due to this limited experience, lay beliefs of health and illness derive from a number of "originally disparate and distinct sources", "are seldom formalised and normally only emerge as an element of decision-making about actual illness episodes..." whereupon "...they are expressed extremely tentatively" (Fitzpatrick et al., 1984, p. 18). Christman (in Fitzpatrick, 1984, p. 15) carried out a

cross-cultural review of folk ideas about the causation of illness and identified four basic kinds of thought that account for the variability and complexity of lay perceptions of health and illness:

- "1. A logic of degeneration in which illness follows the running down of the body.
2. A mechanical logic in which illness is the outcome of blockages or damage to bodily structures.
3. A logic of balance in which illness follows from disruption of harmony between parts or between the individual and the environment.
4. A logic of invasion which includes germ theory and other material intrusions responsible for illness."

In addition to such kinds of thought amongst the people of South Africa, there are the traditional African beliefs regarding disease causation. "The original African notion of disease causation encompasses various factors: disease is the result of natural factors but also of supernatural forces (white and black magic), ancestral spirits, violating taboos, transgressing kinship rules or failing to observe religious obligations" (Van Rensburg, Fourie & Pretorius, 1992, p. 325). It is interesting to note that they do not perceive people existing "as isolated beings but that they are dynamically enmeshed in a web of relationships and influences with other people, spirits, and nature (Booyens, cited in Van Rensburg et al., 1992, p. 325). The Xhosa term for health - mpilo - is more comprehensive than the biomedical approach, meaning harmony with the cosmic life force. Human anatomy and physiology are inter-related to the social and physical environment, and treatment aims to restore this harmony through diet, herbal medicines,

behavioural changes and rituals. (Van Rensburg et al., 1992.)

The considerable difference between lay peoples' and professional health workers' concepts of health and illness is explained by the following quote from Engel ((cited in Fitzpatrick, 1984, p. 16):

"The dominant model of disease today is biomedical, with molecular biology its basic scientific discipline. It assumes disease to be fully accounted for by deviations from the norm of measurable (somatic) variables. It leaves no room within its framework for the social, psychological and behavioural dimensions of illness."

Therefore, to understand perceptions of health and illness, as well as illness behaviour, a socio-psychological perspective is needed. This perspective, that combines the findings of sociology and psychology, is appropriate in that individuals do not function in isolation. Zimbardo et al. (cited in Counte & Christman, 1981, p. 8) contend "that there are two sets of forces impinging upon behaviour: 'inside' forces such as personality differences, attitudes, beliefs, and motives and 'outside' forces that emanate from situational realities and group involvements." Kiesler et al. (cited in Counte and Christman, 1981, p. 8) note that this explains "the tendency of different individuals to behave differently in the same situation and the same individuals to behave differently in different situations." The approach is similar to the symbolic interactionist one of sociology where beliefs, values and attitudes are studied in an attempt to "...link the individual's view of the world to the way he behaves" (Tedeschi et al., cited in Counte & Christman, 1981, p. 10).

### 3.2 The influence of beliefs, attitudes and values upon health-related behaviour

There is often ambiguity surrounding the definition of beliefs, attitudes and values and their influence on behaviour amongst different authors. Azjen and Fishbein's perspective on the relationship between beliefs, values and attitudes with regard to health and health behaviour will be adopted for this study (cited in Hubley, 1988, p. 135). They advocated that "the term attitude should be used for a person's judgement of a behaviour as good or bad and worth carrying out." The beliefs he has about the consequences of performing the act, based on the facts to which he has been exposed (in other words his cognitions) will influence this judgement. Therefore, if his cognitions lead him to decide that the consequences will be advantageous his attitude towards the behaviour will be favourable, whilst cognitions which result in the perception that the outcome will be negative will obviously result in an unfavourable attitude. The values which the person holds will also affect the decision to behave in a certain way. For example, if an individual values conforming to peer group norms over health, then even though he believes that a certain action will be advantageous for health, his judgement of the behaviour as worth carrying out will be moderated by the desire to gain peer approval.

Unfortunately, as explained by Azjen and Fishbein above, it cannot be assumed that what a person thinks and feels about an object will correspond to what he does about it, as the relations between beliefs, attitudes and behaviour are not always predictable. It is felt that "the relationship of beliefs and



attitudes to any given behaviour may be moderated or even counteracted by external factors and/or normative pressures that also affect the behaviour" (Counte & Christman, 1981, p. 11). Therefore, beliefs, values and attitudes are only one aspect of the complexity of perceptions of health and illness.

### **3.3 The difference between health behaviour, illness behaviour and the sick role**

In 2.4 the terms health, disease and illness were differentiated. Similarly, clarification of the terms health behaviour, illness behaviour and sick role is necessary as they are sometimes used inappropriately.

Health behaviour is defined by Kasl and Cobb (cited in Scambler & Scambler, 1984, p. 32) "as any activity undertaken by individuals who see themselves as healthy for the purpose of preventing disease or detecting it in an asymptomatic stage."

Illness behaviour is defined as the action taken by people who perceive themselves as ill in order to define their state of health and to find an appropriate remedy (Counte & Christman, 1981; Scambler & Scambler, 1984).

General consensus surrounds the term sick role "which refers to how persons are expected to (and often do) behave in relation to doctors, work duties etc..." (Fabrega, 1979, p. 565). Sick role behaviour is shown by people who have been diagnosed, either formally by a health care professional or informally by themselves or others, as ill and is directed towards recovery (Kasl & Cobb, cited in Feist & Brannon, 1988). This behaviour

is identified as a social role (Parsons, 1960).

However, some authors explain that illness behaviour "covers activities and concerns linked to the seeking of medical care, the obtaining and purchase of medical care and the compliance with a medical regimen - as well as the more specific sick role behaviour" (Fabrega, 1979, p. 565).

Suchman (cited in Counte & Christman, 1981, p. 35) identified five inter-related stages of behaviour which occur when a health problem or deviation takes place:

(a) Symptom experience, which may incorporate physical changes, emotional effects and cognitive interpretations.

(b) The assumption of the sick role begins with behavioural adjustments and referral to others (lay referral structure - see 3.6.1.1) in order to make a decision about a course of action.

(c) The seeking of care from the health care system, if this is necessary.

(d) The person adopts a dependent patient role if he is being treated by a doctor.

(e) As part of the recovery or rehabilitation stage, the person either returns to his "well roles" or assumes the "role of the chronic invalid".

Although these observations were made some time ago, recent work supports them and they are valuable in understanding what happens when illness and sick role behaviour occurs. However, the assumption of the

patient role is not necessarily dependent on treatment from a doctor and may occur in response to care from other health care workers such as a nurse or a traditional healer. The following sections will examine illness behaviour in more detail.

### 3.4 Illness behaviour

Illness behaviour is complex because variations occur between individuals experiencing the same symptoms. Some individuals will seek help whilst others may choose to ignore the symptoms (Feldman, cited in Feist & Brennan, 1988; Mechanic & Volkart, cited in Scambler & Scambler, 1984). An insight into the reasons for this will provide some understanding of the way in which health care services are used and the willingness of individuals to take action.

Contrary to Counte and Christman's contention (1981) that individuals' experience of being ill is limited, studies have shown that a significant proportion of the population will report symptoms at any one time (Reeckie & Scott, 1988; Scambler & Scambler, 1984). However, only a small number of these individuals will seek medical assistance for them, a finding which has led to the term 'illness iceberg' (Last, cited in Scambler & Scambler, 1984). Obviously the importance that individuals attach to the symptoms will largely determine the nature of the action taken. Their evaluation of this importance is not always congruent with that of health professionals, resulting in complaints that patients frequently present with trivial problems (Calnan, 1988; Kohn & White, 1976; Hannay, and Cartwright & Anderson, cited in Scambler & Scambler, 1984). "The marked disjunction between lay

interpretations of illness and medical perspectives on disease" is worrying in that it affects the communication between these people and thus has consequences for the effectiveness of the treatment and satisfaction of the patient with the care received. The only symptoms which are congruently perceived by patients and health care professionals are "temperature of 105 degrees, fractured leg, broken back, severe heart attack and extreme psychosis" says Mechanic (cited in Scambler & Scambler, 1984, p. 36).

Faced with the complexity of illness behaviour amongst individuals it is necessary to explore the source of such variability. This lies in the specific psychological and social factors that influence how symptoms are perceived and evaluated by people. These factors are considered below, although it must be remembered that a number of them will operate together in the individual.

#### 3.4.1 Psychological factors

Feist and Brannon (1988) note that despite increased knowledge of physiology and medicine, people are still generally unaware of how their bodies work and how they become ill, even so-called well educated people. A number of psychologists have studied how people come to understand illness, notably Leventhal et al. (cited in Feist & Brennan, 1988) who identified four components in the conceptualisation of illness:

(a) The identity of the illness whereby it is given a label (according to previous experience) is important for providing a framework for symptom interpretation.

(b) The time line of the illness is involved in its conceptualisation. The understanding of the time course is not always accurate, for example people with chronic diseases such as diabetes and epilepsy sometimes think that they will eventually disappear.

(c) The perceived consequences of the disease can affect the interpretation of symptoms and how people react, for example avoidance of reporting a breast lump due to fear of a diagnosis of malignancy.

(d) The use of attribution theory, that explains the way people react to unexpected physiological changes. According to attribution theory, people use information that they are exposed to so that they can make causal inferences or attributions about the types of events they observe, whether personal or interpersonal. Through this they develop a causal scheme to understand the events that occur (Counte & Christman, 1981; Lau & Hartman, cited in Feist & Brennan, 1988). Pennebaker & Skelton (cited in Counte & Christman, 1981) found that attentiveness to one's bodily state, knowledge about the significance of events and mood state were factors associated with the amount of thought about and significance attached to symptoms. Koslowsky et al. (cited in Counte & Christman, 1981) identified personal (tension, fatigue) and environmental (family, supernatural) attributions amongst patients following myocardial infarction. They stated that these causal schema were not related to sociological characteristics such as social class and religion.

#### 3.4.2 Social factors

These factors concern the effects of social

structural and situational factors in relation to dealing with illness symptoms, rather than the examination of individual personality traits (Counte & Christman, 1981).

#### 3.4.2.1 Sociocultural factors

In terms of this perspective, the experience of health and illness is governed by group-based forces, such as culture, values and norms and thus focusses on forces external to the individual (Counte & Christman, 1981; Miguel, 1979).

As previously explained, health and illness occur in a particular cultural setting that will determine how they are experienced. Fitzpatrick et al. (1984, p. 13) state that "culture, understood here as a connected pattern of language and beliefs, enters into the very nature of illness." Kleinman, Eisenberg and Good (cited in Fitzpatrick, 1984, p.13) refer to illness as the experiential aspects of bodily disorder that are "shaped by cultural factors governing perception, labelling, explanation of the discomforting experience." Therefore, medical sociologists attribute the differing reactions to illness to social differences, that exist because society is comprised of an aggregate of subgroups, based on social distinctions such as age, ethnicity, religion, social class and geographical residence. Through the process of socialisation, members of these groups learn response patterns to illness that are determined by the beliefs, attitudes and behaviour of the group (Counte & Christman, 1981). Group-based norms shape the manner in which people learn to respond to health challenges and later sustain these reactions through social influence (Counte & Christman, 1981).



Social class is very useful in understanding social and cultural differences in response to illness, yet it is important to realise that they are very broad concepts. Social class has been defined by Townsend and Davidson (cited in Fitzpatrick & Scambler, 1984, p. 55) as "segments of the population sharing broadly similar types and levels of resources, with broadly similar styles of living and ...some shared perception of their collective condition." Traditionally, when it comes to assigning people to a social class, this has been done on an occupational basis. Each class is constituted from a grouping of occupations that share similar social status. These classes are ranked in a hierarchy of social prestige. The well-known U.K. Registrar General's classification of social classes (cited in Fitzpatrick & Scambler, 1984) employs this approach (Table 3.1).

Although occupation is an indicator of life-style, in itself it is insufficient to explain behaviour. There is a need for additional specific social indicators, for example income, housing conditions and educational level in order to examine inferences in health and illness experience. Illsley (cited in Fitzpatrick & Scambler, 1984, p. 57) points out that classes are "summary expressions of complex changes in the economy and division of labour and in the social movement of individuals over time". Consequently, the size, composition and stability of social classes change constantly and for this reason Fitzpatrick and Scambler (1984) emphasise that the finding of a relationship between social class and a particular variable is the beginning and not the end of a social explanation.



Table 3.1: Registrar General's social class classification

Social class	Descriptive definition	Examples of occupations
I	professional	doctor, lawyer
II	intermediate	sales manager, teacher
III	skilled non-manual	clerical worker
III(M)	skilled manual	bricklayer, electrician
IV	partly skilled	farm worker, bus conductor
V	unskilled	office cleaner, railway porter

(From Fitzpatrick & Scambler, 1984, p. 56)

Studies on the reaction of men and women to illness have shown that men tend to be less complaining of symptoms (Kasl & Cobb, cited in Counte & Christman, 1981; Reeckie & Scott, 1988; Waldron, cited in Scambler & Scambler, 1984) although a more recent study (McKinley & Dutton, cited in Counte & Christman, 1981) found that this was not the case in all groups, probably due to the growth of the women's movement. Mechanic (cited in Albino & Tedesco, 1984) noted that women may be more prepared to respond to illness by taking medication, remaining in bed and complying with treatment than men, whilst Liebowitz (cited in Albino & Tedesco, 1984) found that women tended to take more medicines and stayed away from work for longer when ill. However, the mortality rates for women are lower than men, partly because they are more ready to care for themselves when ill (Woods, in Fogel & Woods, 1981).

Baumann (cited in Counte & Christman, 1981) identified that higher educational status was positively associated with greater attention to the presence of symptoms. Obviously, the greater the understanding of scientific causes of disease the more likely people were to attach significance to and take action in the event of symptoms.

Numerous studies have concluded that ethnicity and religion will influence illness experience due to cultural conditioning (Mechanic, cited in Counte & Christman, 1981). Social class is also found to be associated with certain types of illness behaviour, although the exact nature of the relationship is controversial. For example, McKinley and Dutton (cited in Counte & Christman, 1981) suggest that whilst lower-income individuals are more concerned about their health, tolerance of symptoms is greater. Counte and Christman contend that this tolerance is probably not volitional but rather due to the fact that these people are less able to take time off to assume the sick role. Blaxter and Paterson (cited in Fitzpatrick & Scambler, 1984) noted that unskilled and semi-skilled workers perceived health in functional terms and the ability to carry on working, with little sign of a positive sense of health which could be actively promoted by the individual. Pill and Stott (cited in Fitzpatrick & Scambler, 1984) showed that home-owners were more likely to attribute the development of diseases such as heart disease and malignancy to individual life-style than non-owners, and this related to the presence of an internal locus of control (see 3.6.1.2).

A significant problem with the sociological perspective is that although there are modal tendencies

across groups "the variation within groups is much greater than it is between groups" (Counte & Christman, 1981, p. 29). Generally, sociodemographic characteristics are viewed as mediatory elements which may influence other elements (Calnan, 1988).

Another major problem is that the differing reactions are constantly changing and therefore knowledge of the individual's membership of a particular group will not allow an accurate prediction of his perception of health and illness (Counte & Christman, 1981). "The effects of initial socialisation into a specific group are moderated by constant interaction with other membership groups" (Counte & Christman, 1981, p. 24). Thus it is a useful perspective on a collective basis, but cannot account for individual effects.

#### 3.4.2.2 Situational factors

Researchers in this area assert that "recognition and interpretation of symptoms is more heavily influenced by transient personal and situational factors than by habitual and learned response patterns" (Counte & Christman, 1981, p. 24). For example, high levels of psychological distress are related to increased concern for health status, higher levels of perceived disease, greater importance attached to possible consequences of disease and more positive judging of the potential benefits of taking action (Counte & Christman, 1981).

In some social situations, certain factors will draw attention away from symptoms, a phenomenon that has been referred to as "containment of symptoms" (Alonzo, cited in Counte & Christman, 1981, p. 25).

For example, an individual's responsibilities and the satisfaction derived from their work may cause them to ignore symptoms.

Mechanic (cited in Counte & Christman, 1981) identified the following factors that would influence perceptions of symptoms:

- "1. Symptom salience (how apparent and dramatic is the change)
2. perceived seriousness (how familiar is the symptom)
3. behavioural interference (role disruption )
4. symptom frequency and persistence (does it go away)
5. tolerance of the person and observers
6. cognitive appraisal (available information about the symptom)
7. denial needs (can result from psychological anxiety)
8. competing needs (importance of health and other goals)
9. alternative interpretations (what kinds of attributions are available other than the onset of the disease)
10. perception of treatment accessibility (personal and social costs, effort needed, and cultural barriers)."

Essentially, these can be classed into three major sources of influences on the reactions to symptoms or health deviation - personal characteristics, and social and situational forces' (cited in Counte & Christman, 1981).

#### \* 3.4.2.3 Illness behaviour for secondary gain

It has been found that in some cases, illness can be used for secondary advantages ensuing from the withdrawal from role obligations, social responsibilities and expectations, and the claims for social failure (Mechanic, cited in Counte & Christman, 1981).

#### 3.4.2.4 Social role and task performance disruption

The sociological frame of reference views health and illness with regard to the performance of social roles and tasks. Parsons contends that health is a "functional requisite of social systems, and every society has a vested interest in maintaining levels of capacities in its population sufficient to ensure that [tasks essential to the survival of society] are performed." Therefore society attributes a social value to health that is seen as a norm, whilst illness is defined as deviant according to Parsons. In terms of this, illness is recognised as a "disturbance of the capacity of the individual in normally expected role or task performance" (cited in Counte and Christman, 1981, p. 26). Mechanic noted that this behavioural interference or role disruption was a dimension of the illness experience (cited in Counte & Christman, 1981).

It appears that the manner in which an individual reacts to illness "may be a function of the attributes of the symptoms (eg. visibility and pain), the current psychological state of the person (eg. anxiety level), interpersonal responsibilities and pressures, or an interplay among all three factors." Furthermore, the demands of social roles and their associated activities, whether from family or work, can minimize the disruptive influence of symptoms if they are satisfying or potentiate the influence if they are dissatisfying. (Counte & Christman, 1981, p. 29).

The factors discussed above will be taken into account in the model and strategy for the measurement of aggregate health status in the organisation, and

examined when the strategy is tested.

### 3.5 Sick role behaviour

"When behaviour related to illness is normatively organized into a pattern, a social role, the sick role, becomes a meaningful mode of reacting to or coping with the potential hazards of sickness by society and may or may not differ from the criteria and norms of the physician and other healers in the same society" (Jaco, 1979, p. 118). In this way, behavioural norms, expectations and organised relationships govern the behaviour of members of society once they are deemed to be sick.

In his seminal work on the sick role, Parsons presented a sociological view of illness when he described the sick role as consisting "of two rights accorded to the individual concerned (not blamed, exemption from well roles) and two responsibilities (seek aid and participate in treatment)" (cited in Counte & Christman, 1981, p. 34). Although this theory has been extensively used it is not always true that individuals are exempted from blame when society assigns the sick role. When it is perceived that an individual's constituted a health risk, for example excessive drinking he may well be held responsible for his illness. The recognition of the importance of life-style in determining health and the ethic that health is an individual and social responsibility highlight the inaccuracy of this premise (see 1.1.1). Feist and Brennan (1988) and Gallagher (1979) have noted that people do blame the victim for his misfortune and although this may be irrational at times it is part of the attribution process of understanding

illness. Parsons was emphasising the perspective that the person is not blamed so that the sick role is accepted and the person is comfortable with it. This will hold true where attribution cannot assign blame to the person for falling ill.

Walt (1985, p. 191) explained that as health care professionals realised that life-style is greatly implicated in the causality of diseases they adopted a 'victim-blaming' stance towards these 'self-inflicted diseases'. However, more recently, the influence of the environment upon health status has been recognised, as well as the fact that individuals and communities cannot always control the health hazards it presents. This has prompted health care professionals to adopt a more moderate view towards the sick person and to focus on the "manufacturers of illness", for example the manufacturers of milk formulas, industry as producers of pollutants and tobacco companies who promote smoking, calling for increased control and "primordial" prevention.

### 3.6 Utilisation of the health care system

The utilisation of the health care system involves aspects of illness and sick role behaviour and is determined by factors that influence the recognition of illness. It is considered important for this study in that it will explain where and how people seek help when they are ill (illness behaviour), how they evaluate the care they receive, whether health care services are able to meet their needs and how all these can influence their compliance with the treatment regimen and its effectiveness (sick role behaviour). Kohn and White observe that the use of the health care



system "is a complicated event determined by the interaction of biological, psychological, and social forces that affect not only the volume but also the type and quality of service consumed" (1976, p. 21). These aspects will be incorporated into the model and the strategy for measuring health in this study.

### 3.6.1 Group influences upon utilisation behaviour

A number of studies have examined the way in which social groups and social factors affect the use of the health care system and many of their findings will be accommodated in the model and strategy.

#### 3.6.1.1 Lay referral system

As explained in 3.3, Suchman (cited in Counte & Christman, 1981) described the second stage of an illness episode as the period when the person makes behavioural adjustments and begins to assume the sick role by relying on the advice of other people in order to make a decision regarding further action. He noted that few people were confident enough of their own knowledge to make the decision to seek medical care without the support of significant others, and also sought their approval for the relinquishment of role responsibilities that was attendant upon the assumption of the sick role.

It is most likely that the social control exercised by the health profession to discourage overutilisation for trivial (according to their perception) complaints is also implicated here. Nevertheless, decisions to seek help are most often consensual decisions made "within the family or validated by valued referents" (Counte & Christman,

1981, p. 39).

Friedson has proposed a model of illness behaviour (cited in Scambler & Scambler, 1984, p. 39) according to which "lay culture...creates 'illness' as a social meaning just as the medical profession creates 'disease' as a social meaning". Therefore, lay definitions of health are culturally relative and an individual perceiving himself as ill and in need of help from the health profession is only likely to find agreement and support within his cultural environment "if he shows evidence of symptoms the others believe to be illness and if he interprets them the way others find plausible."

Once the need for health care is recognised by members of his cultural group, the help seeking is organised by the lay referral system. This involves two elements, "lay culture" that may or may not be congruent with the health care profession, and a "network of personal influences" that he calls the "lay referral structure". The structure provides lay consultants for advice "and also influences the extent to which the lay culture determines his actions for him." It will pressure the person into or away from the professional consulting room and can also enforce a particular orientation towards the illness or it can be loose enough to allow the person "to make decisions contrary to that of his peers without having to suffer their ridicule or scorn."

Table 3.2 shows how health care utilisation can be predicted by variations in lay referral systems.

Table 3.2: Predicted rates of health care utilisation by variations in lay referral systems

Lay referral structure	Lay culture	
	Congruent with professional	Incongruent with professional
loose, truncated	medium to high utilisation	medium to low utilisation
cohesive, extended	highest utilisation	lowest utilisation

(Friedson, cited in Scambler & Scambler, 1984, p. 40)

Where the lay referral structure is cohesive and extended and lay culture is incongruent with that of the health care profession, utilisation of health care services is restricted and alternative forms of health care are likely to be encouraged. The use of the health care system by Africans with traditional beliefs regarding illness causation can be explained by this (see 3.6.1.2 also). In contrast, it is likely that the lay culture of most middle and upper class White people is congruent with the profession and that the lay structure is cohesive and extended, so that high levels of utilisation occur.

This model offers some insight into the utilisation of health care but it is possible that it is valid for social networks with stable cultural milieux, where social and geographic mobility is low. Where mobility is high, it is likely that the influence of the lay referral system will be mediated by other factors (Scambler & Scambler, 1984).

The reasons for the use of alternative forms of health care, a phenomenon that is on the increase, lie

in the failure of health care services to meet health needs and because the suppliers determine the nature of the service rather than the consumers. For example, the doctor may not attach the same significance to the patient's symptoms as he does and consequently misses the real problem behind the offered reason. His treatment may be inappropriate in the eyes of the patient, who is left feeling dissatisfied as he did not receive the help he wanted. This affects compliance and the effectiveness of the treatment (Calnan, 1988; Counte & Christman, 1981; Fitzpatrick, 1984; Kohn & White, 1976). Furthermore, sufficient time is seldom available for health care providers to listen and communicate effectively with their patients, a process that is vital to the therapeutic encounter.

By contrast, providers of alternative forms of care are able to offer this service. Additionally, their frame of reference regarding illness causation may be more appropriate for the patient than that of health professionals, enhancing their ability to assist with the problem as far as the patient is concerned. De Leeuw (1989) attributes the popularity of alternative health practitioners to client friendliness and inter-personal sensitivity, rather than a relatively higher efficacy of practices such as meditation, biofeedback and hypnosis. Haus (1987, p. 455) also lends support to these points and concludes that "traditional medical practice is losing touch with the ground-stream of basic human need." The extent of the use of alternative forms of health care is an area that requires further attention to evaluate the acceptability and efficacy of the health care system particularly in South Africa where traditional healers form an important part of the system for many of its people.

### 3.6.1.2 Sociocultural influences

A number of theories have been propounded to explain the use of the health care system on the basis of social class differences. The first two discussed below emphasise cultural beliefs, attitudes and lifestyles in their explanations of social differences. The first is the 'culture of poverty' thesis (Rosenstock, cited in Feist & Brennan, 1988) that maintains that poverty-stricken communities develop a culture that embodies a sense of powerlessness, passivity and fatalism. In terms of this, members of this community accept low levels of health and mistrust modern medicine in general and preventive health in particular.

The second theory explains the differences in the utilisation of the health care system on the basis of membership of middle-class or working-class groups, a stance adopted in many studies. Non-manual occupations are perceived as having greater advantages over manual occupations as far as power, status and income are concerned. However, as explained in 3.4.2.1, social classes are dynamic and there is a constant process of change. Thus there are in fact "considerable differences of rewards and prestige within both the non-manual and manual sectors" (Parkin, cited in Fitzpatrick & Scambler, 1984, p. 59).

The third theory of social differences in utilisation concerns the cost-benefit approach. In terms of this, these will be perceived according to social class differences. For example, time costs will be particularly relevant for "people dependent on public transport, who have further to travel for health



care facilities, and are more likely to lose wages for time taken to go to the doctor", resulting in a "disincentive to consulting the doctor." If "health benefits of consulting are less, either because certain groups have less health knowledge to understand benefits, or because they actually derive less benefits, this will also decrease the likelihood of consulting." (LeGrand, cited in Fitzpatrick & Scambler, 1984, p. 59.)

Subcultural norms and values may also affect the utilisation of the health care system. Antonovsky noted that they may facilitate the assumption of the sick role, whilst Hoppe and Heller found that familial norms in some cultures could prompt more reliance upon the family before the assistance of health care professionals was sought, as they were perceived as outsiders (cited in Counte & Christman, 1981). Friedson and Bochner both conducted studies that showed that the greater the social distance (whether evaluated on social status or education) between the user and the supplier the less likely that there will be understanding and empathy (cited in Fitzpatrick & Scambler, 1984). Therefore social similarity between the user and supplier is most important.

★ With regard to the African people, their conceptions of health and illness result in a fatalistic attitude, whereby illness and death are common events that are not subject to control and are the will of a superior force (Van Rensburg et al., 1992). Assistance from health care workers is perceived as relevant only for certain natural health problems, such as colds and epidemics. However, when they are due "to the active, purposeful intervention of an agent which can be human (a witch or sorcerer), non-

human (a spirit or ancestor) or supernatural (a deity or other very powerful being)", they are identified as diseases of African people and therefore can be treated only by traditional healers (p. 326).

### 3.6.1.3 Demographic variables

Large scale surveys into the utilisation of the health care system examine heterogeneous populations and include users and non-users. They usually study three classes of major variables according to Andersen and Anderson (cited in Counte & Christman, 1981). These are enabling factors (insurance coverage, family income and accessibility of facilities); predisposing factors (gender, educational level, occupation); and estimates of need (self-evaluation of health status, sick leave and restricted activity). (See 5.4.2 and 5.5.3.3.

Attempts to understand persistently low utilisation rates despite the apparent high medical need by low income people have not yielded consistent results due to the complexity of variables involved. However, low rates are generally attributed to lack of financial resources, unacceptability of health services and inequalities in health care services (see 5.4.2). For example, long waits, inappropriate hours of operation, culturally unacceptable approaches, fragmented services and lack of knowledge of how to use the system are some of the factors that have been mentioned. This study will incorporate the assessment of a few of these in an endeavour to identify inadequacies in the health care system as far as employees are concerned.



### 3.6.2 Individual influences upon utilisation behaviour

Wolinsky (cited in Counte & Christman, 1981) and Kohn and White (1976) have pointed out that social factors alone will not account for the utilisation of the health care system on an individual basis, and thus a combined approach is needed. For example, psychological stress as a factor has a greater influence on determining what a person will do about illness than gender and personal health status (Counte and Christman, 1981).

A number of models of health behaviour have been developed to demonstrate the combined effect of factors on individuals. Health Belief Model was proposed by Rosenstock et al. (cited in Feist & Brennan 82:1988 and Pender, 1987) to amalgamate the cognitive and social factors that affect health, illness and sick role behaviour into a predictive model of behaviour (Figure 3.1). It was designed to explain the likelihood of people engaging in preventive health behaviour associated with the seeking of care and compliance with treatment. The model has since been modified to include further factors. Six sets of factors that will influence health-related actions are identified in the model:

(a) The person's level of health motivation, in other words the value of health in relation to other social preferences.

(b) Perceived vulnerability - it has been found that high levels of perceived vulnerability are associated with greater likelihood of taking action, although people are generally overly optimistic regarding their chances of becoming ill (Weinstein, cited in Feist & Brennan, 1988).

(c) Perceived severity.

(d) Perceived benefits of seeking help.

(e) Perceived costs of this behaviour including the economic, social, physical and psychological costs. If the individual perceives that the treatment is likely to be effective this will moderate perceived high cost (Feist & Brennan, 1988).

(f) Critical events, such as the lay referral system, that affect the person's values and actions and "triggers" that prompt action. The latter were either internal, for example pain, or external, for example difficulty in performing occupational tasks (Scambler & Scambler, 1984, p. 37).

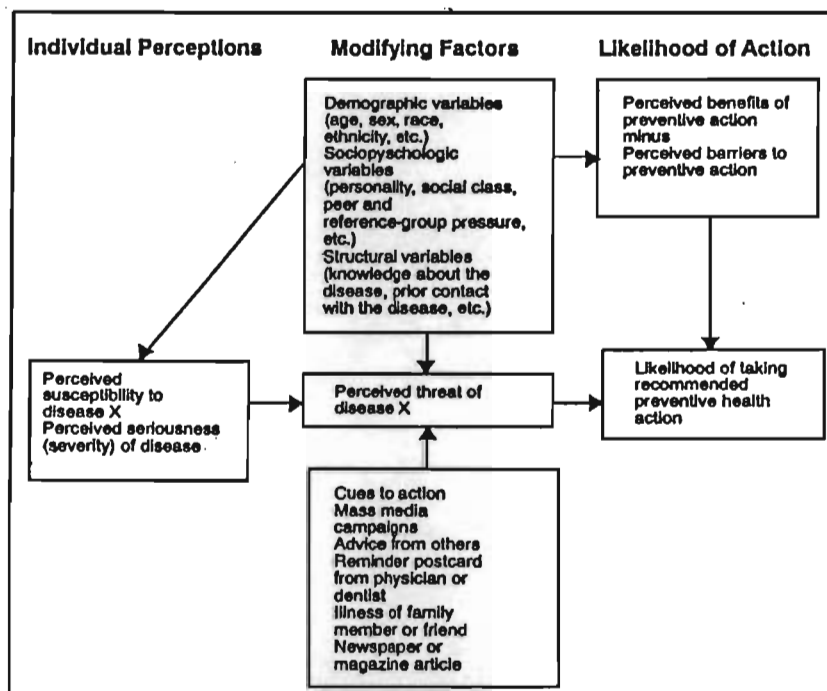


Figure 3.1: The health belief model (Rosenstock et al., in Pender, 1987, p. 45)

Proponents of this model "view health beliefs as direct causes of utilisation behaviour and other factors such as gender as indirect causes" (Counte & Christman, 1981). Kirscht (cited in Counte & Christman, 1981) noted that self-concept, socialisation experiences and current life-style will also influence health beliefs. The model takes cognisance of the role of stress in determining action, and is basically focussed "on the influence of subjective perceptions and situational contingencies" (Counte & Christman, 1981, p. 48). Expanded versions have included additional variables such as patient satisfaction and accessibility of services. Figure 3.1 shows the Health Belief Model.

Criticisms of the model stem from the lack of standardised methods of measuring perceived susceptibility, severity or belief of efficacy of treatment (Feist & Brennan, 1988). Stone (cited in Scambler & Scambler, 1984) states that the model only allows qualitative not quantitative predictions of behaviour. For these reasons it has been concluded that it is really a conceptual framework (Scambler and Scambler, 1984) that describes a "catalogue of variables that relate to health behaviour [rather] than a coherent model that accurately predicts health behaviour" (Feist & Brennan, 1988, p. 83). Nevertheless, it has provided valuable insights into health behaviour and many of the variables to be included in the strategy for measuring aggregate health status will be drawn from it.

As research has continued, other models have evolved from the Health Belief Model such as Pender's (1987) Health Promotion Model and Hubley's (1988)

BASNEF model that draws upon Green's PRECEDE model and Azjen and Fishbein's theory of reasoned action.

### 3.6.3 Compliance

Compliance has been defined as "the consistency of patient behaviour with a programme of treatment as prescribed by a medical authority" (Galloway et al., cited in Counte & Christman, 1981, p. 57). It covers a spectrum of behaviours ranging from keeping follow-up appointments, making recommended behavioural changes and inappropriate consumption of medication whether due to self prescription, failure to take prescribed treatment at all or at recommended times. Consideration of compliance is significant as it appears to be a widespread problem, it carries economic and social implications for the family, work and the wider community (Counte & Christman, 1981; Thompson, 1984), and it will obviously affect the efficacy of the treatment. Changing patterns of disease with an increase in chronic diseases have necessitated a shift from direct medical care to self management, so the need to improve compliance is essential (Becker, cited in Counte & Christman, 1981). In this respect, compliance is an aspect of self-care.

Numerous studies on non-compliance have been conducted and they have focussed on five main aspects (Counte & Christman, 1981, p. 60):

(a) Patient attributes concerning "social structural (education, race, ethnicity, age, and income), personal and motivational (personal sense of control, personality, health beliefs, and attitudes) and situational (social network influences, daily circumstances of living)".

(b) Regimen attributes pertaining to complexity, costs, duration and side-effects.

(c) Disease attributes such as amount of pain and disability, and the chronicity of the condition.

(d) Dimensions and outcomes of the patient-clinician interaction. Factors such as overburdening the patient with complex facts, anxiety arousal, comprehension of instructions, and patient satisfaction are included. Kasl (cited in Counte & Christman, 1981, p. 65) concluded that "the crucial element in the patient-doctor relationship is probably not the exchange of information or facts, but the nature of the expectations each one has about his own role and the role of the other person in the dyad, the congruence and mutuality of such expectations, and the potential for exploring and revising these expectations." Zola (cited in Counte & Christman, 1981) noted that health care professionals are often unaware of the impact of their statements upon people and the fact that these may arouse considerable anxiety, especially when their social backgrounds are very different. Therefore it is most important to understand the patient's frame of reference so that shared meanings of the treatment process can be established (Counte & Christman, 1981). In support of this, Thompson found that although a number of variables might contribute to the satisfaction of the consultation, once satisfaction was achieved behavioural changes occurred (1984).

(e) Organisational factors of a health care programme, for example the extent of treatment supervision.

The Health Belief Model combines a number of these to explain compliance. For example, it has been found that readiness to take action will be determined by health motivation, perceived threat of the illness, and evaluation of the treatment. Associated with the latter is the person's locus of control, in other words whether he believes that he can actively control aspects of his health status (internal locus) or whether he feels that uncontrollable forces will determine his future health status (external locus). A person whose locus is external is less likely to engage in preventive health behaviour, with possible grave consequences for his health status. Thompson notes various studies that found that internal locus of control people were more likely to be non-smokers, to use contraception, to be of normal mass, and wear seat belts (1984). Cromwell (cited in Thompson, 1984) reporting on a weight reduction programme, showed that people with an external locus tended to be influenced by social norms whereas those with an internal locus followed personal attitudes. Caplan et al. found that educational level, situational aspects such as problems of daily living, social support from the family and significant others and the type of care offered will determine compliance (cited in Counte & Christman, 1981).

#### 3.6.4 Lay evaluation of the health care system

An understanding of the lay evaluation of the health care system is valuable because it identifies problems with the system from the user's point of view, facilitates a comprehensive evaluation of the impact of the system and provides insight into the patient's response to and experience of health care (Fitzpatrick, 1984). Lay evaluation will determine how people use

the system and whether they perceive that it will be able to assist them with their health problem, which is basic for the provision of client-centred health care.

Aspects to be considered include patient satisfaction as a dimension of health care evaluation, along with clinical effectiveness, economic efficiency and social acceptability. Calnan (1988) explains that there are a number of important reasons for investigating patient satisfaction. It is a part of the "process" of health care in that it influences utilisation of the health care system, compliance, and is associated with the therapeutic outcome and health status, possibly as the social aspect of the healing process. It is also tied to political beliefs and is a means of "democratising the health services and counteracting the powerful interests of the professions and the state." Furthermore it stresses the need for health care to respond directly to user preferences and demands, in other words consumerism.

Earlier criticisms of patient satisfaction studies related to the reliability and validity of findings as they suggested that patients did not often evaluate medical care as far as clinical competence was concerned and tended to stay on safer ground such as criticisms of waiting time, uncomfortable waiting rooms and poor client-doctor relationship (Pope, and Jefferys, cited in Fitzpatrick, 1984; Calnan, 1988). However recent ethnographic research has shown that patients do evaluate clinical expertise on the basis of their own complex system of theories, perceptions and experience of illness and health care (Calnan, 1988).

Other studies have been criticised for attempting to explain patient satisfaction or dissatisfaction in



terms of expectations. It was found that the concept of patient expectation is problematic as many patients do not have expectations or are uncertain about what to expect (Fitzpatrick, 1984). Therefore, it has been suggested that it would be better to focus on patients' motives for seeking care as they assess the appropriateness of the care with reference to their specific medical needs. For example, a patient seeking aid for a laceration will assess his treatment differently to when he is unsure of the cause of his health problem, in which case he will expect the doctor to decide upon treatment.

Ware and Snyder (cited in Fitzpatrick, 1984) found that people evaluated the quality of care according to the criteria of doctor's conduct, availability of care, continuity and convenience; and financial accessibility.

Calnan (1988) has proposed a useful conceptual framework for understanding lay evaluation of the health care system, in which he incorporated four basic elements (see Figure 3.2).

The first is the specific reason for seeking care, as discussed above. The second element which he identified, is the level and nature of the person's experience of the health care system, as well as that of his close social network. Essentially, this relates to the lay referral system (3.6.1.1). In support of this, Fitzpatrick & Hopkins (cited in Calnan, 1988, p. 930) state that "expectations derived as much from ideas about their current illness as from predictions acquired from experience of doctors in general." It must be noted as chronic health problems necessitate more frequent contact with the health care system, the

levels of medical knowledge increase and patients and their families are more likely to criticise medical competence. The third element of the model relates to the socio-political ideology upon which the health care

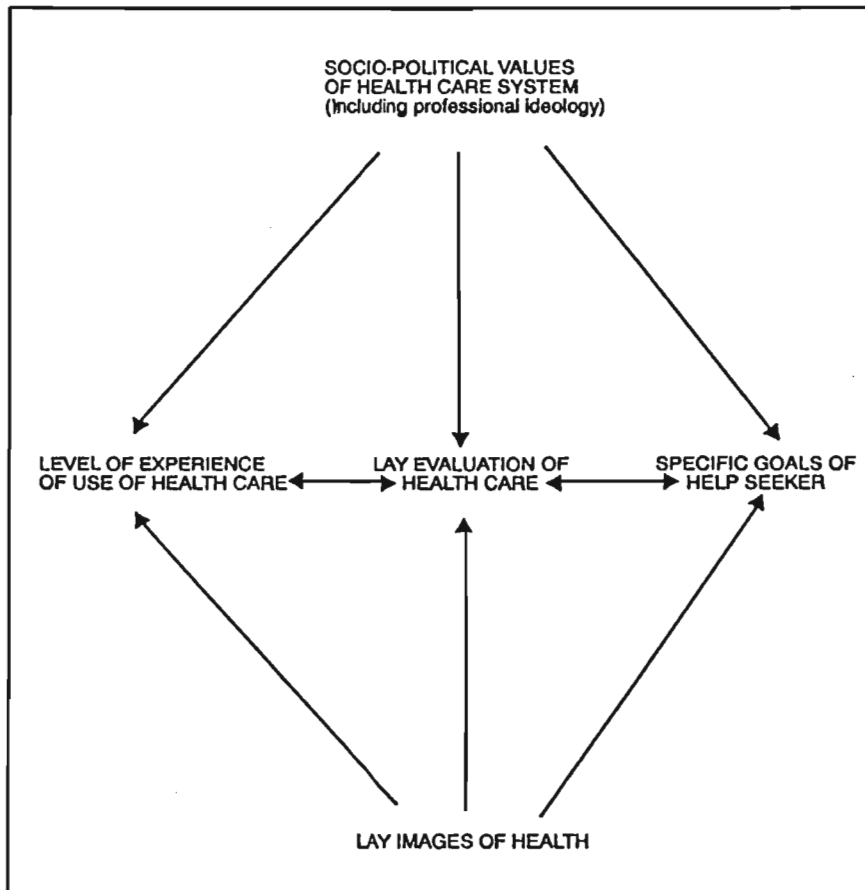


Figure 3.2: Conceptual framework for the lay evaluation of the health care system (Calnan, 1988, p. 932)

system is based. This will be discussed further in 4.4.2. The fourth element concerns the way in which lay perceptions of health shape their evaluation of health care. These will determine when the individual seeks help as explained earlier. Additionally, these "multidimensional definitions will structure their (clients) ideas about what constitutes health care and

their evaluation of it" (p. 930). Consequently, people with low health norms who perceive health as the absence of illness tend to see health care in terms of curative services, whilst those with more 'positive' elements (including psychological and social dimensions) in their conceptualisation of health will assess the adequacy of health care in relation to the whole spectrum of care from preventive to rehabilitative care. Calnan also recognised the importance of socio-demographic characteristics as mediatory influences upon the lay evaluation of health care, an approach which has been discussed at length in this chapter.

### 3.7 Conclusion

Lay perceptions and experiences of health and illness have been reviewed in this chapter. Their complexity and variability in influencing health and health behaviour illustrate the challenge that the occupational nurse faces in providing effective occupational health programmes (see 1.1). As stated at the outset, they represent the subjective, social and psychological dimensions of health and illness and are important because they are largely responsible for the way in which people recognise the need to seek health care, where and how they seek this care, how they use the health care system, how effective the care is, and how they evaluate it. The identification of perceived health needs is based upon many of these aspects, an area that will be explored further in Chapter Five. All of these aspects will be taken into account in developing the conceptual framework, the model of aggregate health and the strategy to measure health status.

## **CHAPTER FOUR: THE INFLUENCES ON THE HEALTH OF THE ORGANISATION AND ITS MEMBERS, ANALYSED ACCORDING TO THE FOUR FACTORS OF THE HEALTH FIELD**

As it is intended that the four factors of the health field will constitute an essential part of the model of aggregate health, the purpose of this chapter will be to analyse the influences on health and health-related behaviour in the organisation according to those four factors. Throughout this discussion, the reciprocity between the health of the individual, the organisation and the community will be highlighted, thereby demonstrating their dynamic inter-relationship and the importance of on- and off-the-job issues in determining health in the workplace. It will also become evident that these influences relate to the many dimensions of health identified in Chapter Two.

In the final section, stress as a major determinant of health in the workplace will be examined. This analysis will serve as a good example of the inter-relations between the four factors of the health field.

### **4.1 Human biology**

Unlike the Lalonde Report and Green and Anderson's

model, this study views human biology as a component of the biopsychological system that makes up each individual. Therefore, instead of merely focussing on genetics, natural growth and ageing, other aspects are incorporated to accommodate the epidemiological concept of the individual as host. This is important as there can be little doubt that on an individual level, health status is largely determined by the host response to the environment. This perspective is supported by Evans and Stoddart (1990) who, by way of example, note that smoking is not just an individual response, but may be a host response where the social environment promotes it. Similarly, stress, whether due to bereavement, powerlessness or work frustration, can have negative effects on an individual's immune system. The fact that these effects can be mediated by a close social network highlights the interaction between the biological response and the environment, particularly the social environment (see 4.5). As another example, it is increasingly being shown that although an individual is born with a genetic predisposition to develop certain conditions, the actual development of these will be determined by their life-style and their environment. Therefore, the perception of a fixed genetic endowment is falling away. They conclude that the "biological vulnerability or resilience of the individual, in response to external shocks, is dependent on the social and physical environment in interaction with the genetic endowment" (Evans & Stoddart, 1990, p. 1358).

#### 4.1.1 Human biology with particular reference to individual susceptibility to work hazards

The control of work hazards and the protection of

workers' health is fraught with difficulties, not the least of which are the differences between various individuals for similar exposure (Rom, 1983). Referred to as individual variability, this problem relates to the wide range in susceptibility to hazards. The World Health Organisation identified two broad types of variability, the first being inter-individual variability and the second intra-individual variability (1975). The former concerns variability between individuals and the latter the variability that occurs in the same individual. This variability may be determined by endogenous and exogenous factors that must be considered in assessing workers' health. A brief overview of these factors will demonstrate that individual variability is due to human biology, mediated by environment and behaviour.

#### 4.1.1.1 Endogenous factors affecting variability

Three endogenous factors have been delineated. Firstly, the age of a worker will determine susceptibility to hazards in a number of ways. Older workers may be more at risk due to the natural ageing effect upon the efficiency of their organ systems. For example, electrocardio-graphical abnormalities are more common in older workers exposed to carbon monoxide. However, there is a process of selection of the fitter workers surviving and remaining at work, so that an older worker may be healthier than a young one.

A second factor is the gender of the worker. It is known that women exhibit a lower tolerance to hazards such as noise and lead. Pregnancy may also have a negative effect upon their ability to perform physical work, apart from the risks to the foetus from exposure to hazards.



Genotype is listed as a third factor. Williams (cited in WHO, 1975) stated that biochemical individuality accounts for a great deal of variability. Normally, a number of measurements of enzyme activity or biochemical 'constants' in an individual will show a range in levels. Whilst this range will not be as wide as that between a number of individuals, it is significant because it can confound the determination of exposure standards. For example, cholinesterase level will drop following exposure to organophosphorous insecticides. An arbitrary standard that deems a 25% fall in the median measure as acceptable, will mask a greater (and therefore unacceptable) decrease in an individual who usually has a range of levels lower than the median.

Specific genetic variations can occur in individuals rendering them more susceptible to some chemicals. For example, haemoglobin abnormalities such as sickle-cell anaemia and sickle-cell trait (susceptibility to low atmospheric pressure) and cholinesterase variants (possible susceptibility to organophosphate insecticides). Chronic non-specific lung disease, such as asthma, can also have a genetic basis that can increase individual risk upon exposure to occupational dusts.

#### 4.1.1.2 Exogenous factors affecting variability

Four exogenous factors that could influence variability were identified by WHO. Firstly, nutrition can influence susceptibility considerably. Malnutrition has been shown to "affect the metabolism of toxic agents and also the tolerance mechanisms" (WHO, 1975, p. 19). An adequate vitamin C intake can



enhance enzyme induction, whilst iron deficiency is thought to contribute to raised erythrocyte protoporphyrin levels in women exposed to lead. Furthermore, the effects of nutrition on the ability of people to perform physical work have been widely discussed.

Secondly, present and past disease states can contribute to variability. Obviously, any organ system that has been weakened by disease will have a lowered resistance to the effects of toxic agents. Additionally, certain drugs used to treat some diseases are known to affect enzyme induction and so influence the metabolism of toxic agents.

Thirdly, previous exposure to a hazard, whether in a previous job or in a non-occupational setting, can have a cumulative effect when exposure recurs at work. Concomitant exposure, in other words combined exposure, to more than one potential hazard can increase health impairment risk. For example, noise and psychological stress can have a deleterious effect upon blood pressure.

Fourthly, environmental conditions can increase susceptibility to hazards. For example, the mode of transport, housing conditions and sanitation can influence the development of disease due to occupational exposure. Air pollution at home will combine with occupational exposure to adversely affect health. A worker who has inadequate washing facilities will find it difficult to maintain a level of personal cleanliness to protect himself from hazardous substances such as lead and asbestos. Workers who have long distances to travel to work will have less time for food purchasing and preparation, recreation and

sleep, thereby reducing their level of wellness. A social environment that encourages excessive alcohol consumption can place the worker at risk due to impaired liver function, poor nutrition and increased likelihood of accidents. As explained in 1.1.2, workers in developing countries are particularly at risk due to the combined effects of "new social-psychological pressures, heavy work loads, and assaults of noise, chemical and air pollution, as well as safety hazards." In addition, they experience "poor nutritional levels and inadequate housing and sanitation, while their family and neighbours (if not themselves) face heavy burdens of infectious diseases such as diarrhoea, malaria, schistosomiasis, tuberculosis, filariasis, leprosy, and...cholera" (Elling, 1981, p. 227).

It is evident that a number of these endogenous and exogenous factors could be present simultaneously in an individual, increasing his or her susceptibility to hazards. Human biology is an important factor to be considered in the assessment of the health status of individual workers. When the aggregate health status of an organisation is to be determined, the patterning of these factors amongst employees must be related to the potential occupational hazards together with the predominant trends in lifestyle.

#### 4.2 Environment

The second health field factor is the environment. As explained in 2.5.6, this includes all aspects related to health that are external to the individual and over which the community may have greater control

than the individual. Ironically, this ability to control and modify the environment can have negative effects on the health of the community when the balance between the dimensions of the environment is disturbed. For every technological advance there is a price to pay, often only discovered at a later time. However, the environment also has the potential to be an enriching and health-strengthening influence when it enables people to maximize their potential (Pender, 1987; Shirreffs, 1982).

The environment as a health field factor interacts closely with the other factors, as stated earlier. Furthermore, it consists of a number of dimensions, each of which are inter-related to some extent, thus accounting for the variations between authors in categorising them.

Rowland and Cooper (1983, p. 11) identify three basic components of the environment - the physical, chemical and biological (Figure 4.1). They explain that "Vertically, those above set the constraints for those below. Feedback can occur in the vertical direction, especially within the physical categories." Additionally, interactions can occur horizontally between physical and social factors, for example prosperity (a social factor) will influence housing and level of education will affect diet and nutrition. Furthermore, the 'web of causation' operates in that a number of environmental factors usually act synergistically.

Another representation of the dimensions of the environment interacting with other health field factors has been proposed by Graham (cited in Shirreffs, 1982), as shown in Figure 4.2. This portrays an aetiological

chain leading to the development of disease, starting with the physical setting in which social situations develop. There is a reciprocity between the social and physical environment, that then influences the contacts that occur between the individual and vectors or environmental changes, as well as their behavioural patterns.

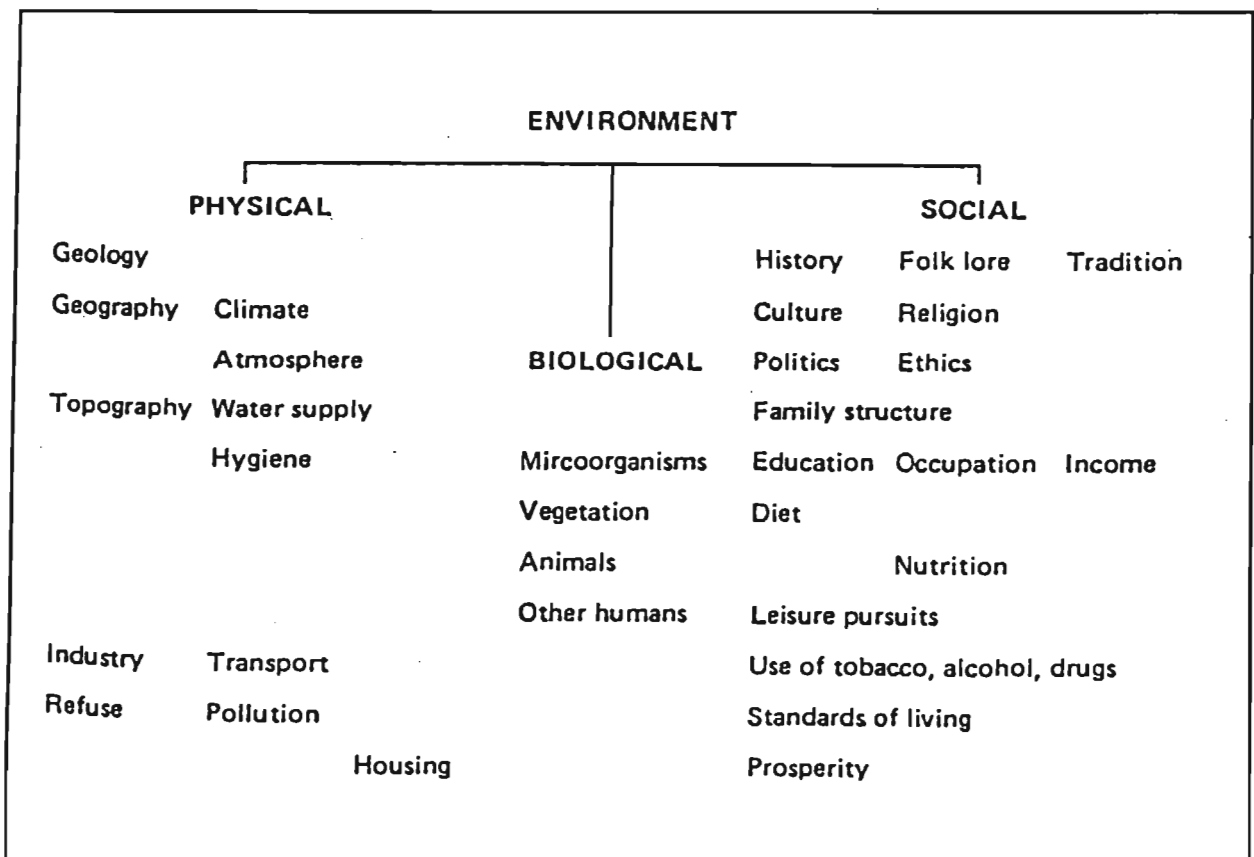


Figure 4.1: The three basic components of the human environment (Rowland & Cooper, 1983, p. 11)

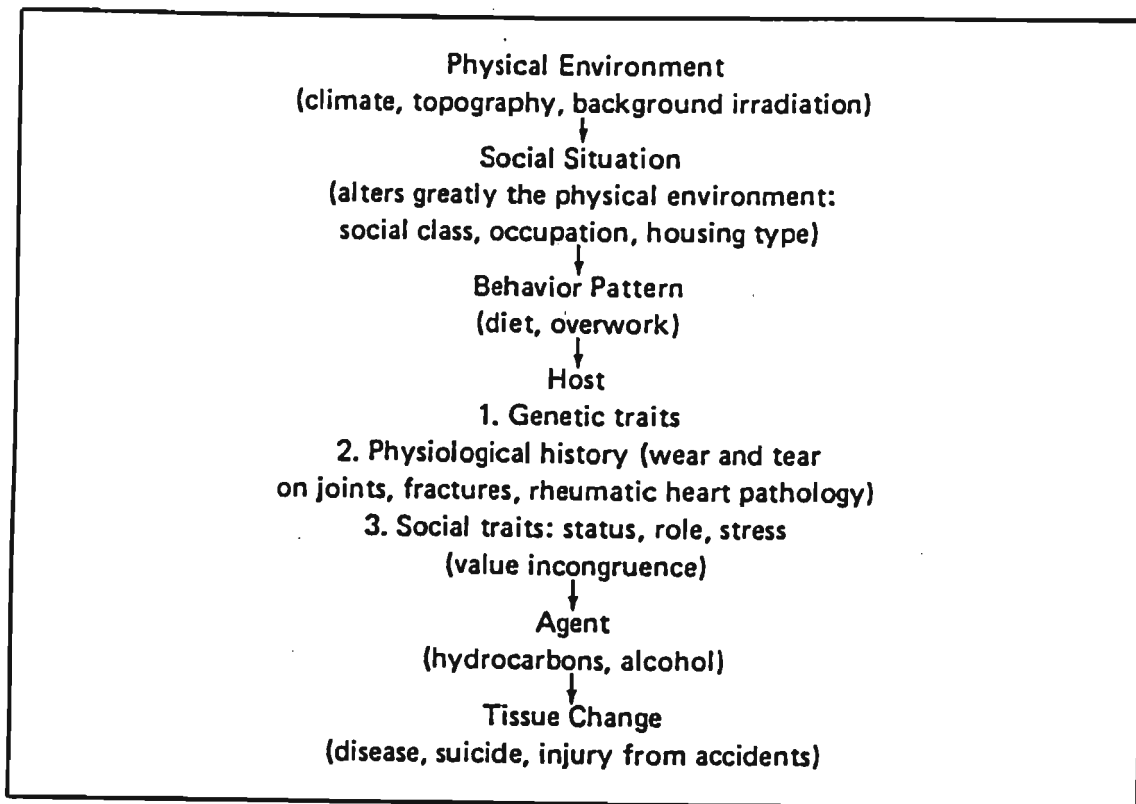


Figure 4.2: The aetiological chain in the development of disease showing the physical and social environment (Graham, in Shirreffs, 1982, p. 37)

In the work environment, the dimensions are usually related to work hazards that can influence health profoundly. Karvonen (1986) identified five variables, these being physical, chemical, biological, organisational and social, whilst Schilling (1981) lists four categories of occupational hazards, namely physical, chemical, biological and psychosocial (see Table 4.1). Yet another categorisation is offered by Richard and Spradley (1990), as shown in Table 4.2.

The conceptual framework of this study will depict the environment as comprising four dimensions. The first three, that is the physical, chemical and biological dimensions, equate well with those of the other authors. The fourth dimension is the social environment. This encompasses the psychosocial category of Schilling and Richard and Spradley. The ergonomic category described by the latter authors is incorporated in the physical environment (for example the physical design of the workplace and the man-machine interface), the social environment (such as work rules and unrealistic work expectations) and the health field factor, behaviour (for example work habits).

It is not the intention to provide an exhaustive analysis of workplace hazards in this study. Nevertheless, a more detailed discussion of the effects of the social environment upon the health of workers will be contained in the section dealing with stress in the workplace (4.5).

The effects of the physical, chemical and biological environment on health have received much attention over the years. However, it is only more recently that the social environment as a health determinant has been stressed, and it warrants closer inspection.

There are many ways in which the social environment can influence the health of communities. For example, socio-economic aspects such as income and occupation, housing and sanitation, nutrition, opportunities for education and recreation all have important consequences for aggregate health status.

Table 4.1: Categories of occupational agents or factors that may cause health problems (Schilling, 1981, p. 548)

Category	Examples of types of agents or factors
Physical	Radiations High and low atmospheric pressures High and low temperatures Noise Vibration
Chemical	Drugs Dyes Explosives Fertilizers Fibrogenic mineral dusts Paints Pesticides Plastics Solvents Wood, plant and organic dusts
Biological	Viral diseases: rabies hepatitis, types A and B Bacterial diseases: anthrax brucellosis leptospirosis tetanus tuberculosis Fungal diseases: dermatophytoses histoplasmosis Parasitic diseases: ancylostomiasis schistosomiasis
Psychosocial	Work organization: leadership style* communication* worker participation and fulfilment* security* Type of work: repetitive overloaded underloaded shift work

\*These factors may help to promote well-being: shortcomings, or lack of them, may cause ill-health



Variable	Physical	Chemical	Biological	Ergonomical	Psychosocial
Definition	Structural elements of workplace	Chemical agents present in work environment	Biological organisms and potential contaminants in work environment	Customs, rules, design, and expectations of the work itself	Workers' values, attitudes, and responses
Selected Types	Radiation Noise Vibration Light Temperature Space Color Pressure Construction	Mists Vapors Gases Solids Liquids Dusts Solvents	Viruses Insects Molds Fungi Bacteria Animals Plants Parasites Rickettsias	Design of work space Design of job Work habits Required motions Design of tools Work standards Work flow	Emotional: Boredom Anger Depression Behavioral: Fatigue Tension Cultural: Values Norms
Illustrative Potential Hazards	Excessive noise Electromagnetic radiation Excessive ionizing radiation Temperature extremes Excessive vibration Pressure extremes Unsafe objects or structures	Excessive airborne concentrations Topical irritants Toxic absorption through skin Toxic ingestion	Contaminated water or food Improper waste or sewage disposal Unsanitary work environment Improper food handling Insect or animal attack Unsanitary personal practices	Improper lifting Poor motions or positions Improper tools Inadequate space to do work Interruptions Unrealistic work expectations Repetitive motion	Boring work Unchallenging work Time pressure Conflicts with worker values Group dissatisfaction Unrealistic personal expectations Peer pressure

Table 4.2: Factors influencing health and productivity in the workplace (Spradley, 1990, p. 534)

Population pressures manifest themselves in urbanisation and migratory trends, changes in the stability of human relations with subsequent insecurities, distress and violence, and overwhelming demands on social services (Meyer & Sainsbury, 1974). Events and conditions operating in the wider community will obviously affect the health status of individual workers who live in those communities, hence the need to consider them when assessing the aggregate health status of an organisation.

Another aspect of the social environment concerns social support. This has been defined as "information leading individuals to believe they are loved, esteemed and valued and belong to a network of communication and mutual obligation" (Cobb, cited in Bloom, 1990, p. 635). Health outcomes are influenced directly through access to the lay information system and the motivation to carry out adaptive behaviours. An indirect influence on health outcomes is effected by encouragement of compliance, the maintenance of health promoting behaviours and instrumental support such as a lift to the clinic. Therefore, integration into the social network enables the use of network resources that can facilitate the promotion, maintenance and recovery of health. Many of these aspects were discussed in Chapter Three. Research has also shown that the way in which a life event is perceived is probably directly related to the individual's social support system. In the absence of a strong system, such events are more likely to be stressful. (Bloom, 1990). This subject will be discussed further in 4.5.

The interdependence of the dimensions of the environment in determining health was well illustrated

in the study by Klitzman and Stellman (1989). They examined the relationship between the physical office environment and the psychological well-being of office workers, and found that poor environmental conditions, particularly bad air quality, noise, ergonomic conditions and lack of privacy can adversely affect worker satisfaction and mental health. Jokl (1982) also demonstrated that the work environment could influence worker performance regarding to quality and quantity, safety, absenteeism and employee turnover.

The environment contributes directly and indirectly to the health of individuals, the organisation and the community. It is not always easy to separate out this contribution from other factors of the health field, nor is it always possible to identify single dimensions of the environment as being responsible for health status. Nevertheless, it is important to examine these relationships in order to be able to assess aggregate health status and establish indicators or key factors to permit measurement.

#### 4.3 Life-style

The third health field factor, life-style, is conceptualised by WHO as "a way of life, a sociocultural phenomenon arising from interactions between patterns of behaviour and specific life situations rather than individual decisions to avoid or accept certain health risks. Considered in this way behavioural practices are shaped by values and beliefs learned in specific cultures, and by opportunities and constraints defined by specific social and economic situations" (cited in Dean, 1989, p. 137). It is further noted that "each form of health-related

behaviour is a product of an inter-relationship between specific beliefs associated with a behaviour and more general conditions and ideologies associated with a particular location in the social structure" (Calnan, 1989, p. 131). Culture, values and beliefs are shaped by the social group to which a person belongs, and these in turn will determine the behaviour of an individual. Therefore, "Lifestyle is also a reflection of the social environment" (Rowland & Cooper, 1983, p. 20). Thus the interplay between the social environment and behaviour is established.

In the past, efforts to modify health behaviour in people have been unsuccessful because they have failed to deal adequately with the sociocultural context and meaning of behaviour (Coreil, cited in Kickbusch, 1989). In order to do this "life-style must be defined in relation to the collective and individual experiences and to conditions of life." The area where the two overlap will represent the range of behavioural options open to an individual. (WHO, cited in Kickbusch, 1989, p. 126). A broad perspective that places life-style in the context of social trends and recognises its origin and growth as inherently social reflects an ecological concept of health instead of a purely medical, behavioural, sociological, environmental or political one (WHO, 1989). As such it is more likely to be successful than an approach that focusses on the modification of discrete behavioural practices.

There are two basic facts to be accepted from the above statements. Firstly, that behaviour is a reflection of the individual's culture, and culture is a functional integrated whole not an assortment of various customs and traits. Therefore to understand

it, each part must be viewed in relation to the other parts and the whole (Spradley, 1990).

Secondly, despite the beliefs that an individual has, he will tend to behave in accordance with the norms of his social group, even if these are contrary to the former. Health-related behaviour is not only a matter of informed choice but rather, it occurs as a consequence of choice from ways of healthy living, personal strengths, resources and the values of the social group (Dean, 1989; Milio, cited in Pender, 1987; Shirreffs, 1982). Whilst an individual may wish to adopt certain health behaviours, the environment can enhance or limit his ability to do so (Calnan, 1989; Dean, 1989). Pender comments that the possible choices and the range of health behaviours which people can make are largely dependent upon the society's values (p. 429). Furthermore, it has been shown that an individual's concept of health and locus of control will determine the extent to which he practices health promoting behaviours (Calnan, 1989), and that people who perceive their health status as good are more likely to carry out such behaviour (Christiansen, Pender & Pender, and Dishman cited in Pender, 1987). These issues have already been discussed in 2.5.4 and Chapter Three.

The same forces determine behaviour in the workplace. For example, safety programmes are unlikely to be effective if they advocate practices which are counter to the culture of the organisation. Productivity incentives can cause workers to disregard safety procedures in work processes, whilst understaffing can promote unhealthy work habits such as excessive hours of work, lack of exercise and sleep, and excessive alcohol and caffeine intake.

The importance of life-style as an influence on health has been emphasised in numerous places in this literature review. However, it is not always easy to establish undisputed causal links between life-style and health due to the difficulties of controlling confounding variables, multi-factorial causation and the synergistic effects of variables. Regarding the latter, individual components of life-style can interact and so generate an effect that is greater than the sum of the individual parts. Interactions between multiple components of life-style and other sources of risk including environmental exposure or predisposing medical conditions may occur (Mettlin, 1979). Smoking and occupational exposure to dusts and other hazards is a good example (Sterling & Weinkam, 1990). A further difficulty is that risks associated with life-style are often more subtle nowadays, so that the effects are cumulative and imperceptible for many years until they result in chronic disease, thus rendering measurement problematic (Green & Anderson, 1986; Mettlin, 1979; Pender, 1987).

In line with the motivation for a broader perspective when dealing with the influence of life-style upon health, Dean (1989, p. 151) pleads for the avoidance of excessive focus on "a narrow range of personal practices statistically associated with chronic diseases of late life [which] neglects behaviours that may be equally important for promoting the health of populations" such as work and traffic safety, and pollution. Shirreffs states that a particular habit, for example drug abuse, should not "be seen as a discrete and isolated behaviour, but as a representative part of a larger behaviour pattern related to the complexities and dynamics of a

subcultural system" (1982, p. 36). Therefore, the larger pattern needs to be evaluated before effective health-enhancing actions can be attempted. This highlights the validity of holistic and ecological models of health (see 2.5.2 and 2.5.3).

Despite the problems mentioned above, there are a number of health-promoting behaviours that have been shown to be associated with good health. These concern exercise, sleep, recreation, alcohol consumption, smoking, diet, stress control, self-actualisation, self-care, use of the health care system, environmental control and safety, and social support (Pender, 1987). Individual health assessments are made in the light of these against identified health risks. This process will be described in greater detail in 5.8.1.5. In the work setting it is especially important to assess work habits and behaviour regarding their potential for negative health effects. The manner in which this is achieved will be discussed in 5.5.2.

#### **4.4 Health care organisation**

The main objective of this section is to examine the influence of health care organisation on individual and aggregate health. A very brief analysis of the effectiveness of health care organisation in South Africa will also be made.

##### **4.4.1 The influence of health care organisation on health**

It was explained in Chapter Two that, for the purposes of this study, health care organisation would encompass all the services or organisations that could



influence aggregate health rather than the narrow definition of medical care originally proposed by LaLonde and later by Green and Anderson. This means that other sectors in addition to the health sector will be included. The reason for this becomes evident when the conditions necessary for health are considered. The European Region of WHO (cited in Whitehead, 1988, p. 348) identified these as:

- \* freedom from the fear of war;
- \* equal opportunities for all;
- \* satisfaction of the basic needs for food, basic education, clean water and sanitation, decent housing, secure work and a useful role in society;
- \* political will and public support to launch the necessary action;
- \* the reduction of health inequalities; and
- \* equal emphasis on strengthening health as on reducing disease and its sequelae.

Two conclusions may be drawn from this list.

\* Firstly, that health cannot be achieved by health sector alone, but requires intersectoral endeavour and participation by the community and its individual members as well.

Second, that equity in health care is essential for health attainment. WHO went on to state that such equity would be achieved "if the basic pre-requisites for health were provided for all; if the risks related to life-styles were reduced; if the health aspects of living and working conditions were improved; and if good primary health care were made available to all." It assigned health differences to living and working conditions, and emphasised that efforts to change life-

styles must be supportive rather than victim-blaming and take account of the limits that social and economic conditions placed on individuals' and communities' ability to make health choices.

Despite this, it is important to recognise that no individual, organisation or government can guarantee that all persons will experience a high level of health due to the nature and influences of health, principally the other factors of the health field, which render health a "moving target". Even "Assuming that uniform compliance with objectively established standards for both of these factors (environment and health care organisation) could be achieved throughout communities and nations, inequality would still remain because of the importance of both genotype and personal attitudes and behaviour." As far as equity in health care organisation is concerned, this is difficult to ensure by virtue of the variations in client behaviour as well as the talents, skills, knowledge, attitudes, commitments and personalities of health care personnel (White, 1979, pp. 59-60).

The statements above indicate the inter-relationships between the four factors of the health field and emphasise that health care organisation alone cannot effect significant health improvement amongst people.

#### 4.4.2 National systems of health care

Before proceeding, it is necessary to clarify the terminology used. Particular health care, health services or health care delivery systems refer to "all those specific institutions or systems in a society which deliver health services to a population or a

specific clientele" (Van Rensburg, Fourie & Pretorius, 1992, p. 2). They includes hospitals and clinics, medical and nursing services, municipal health departments, traditional health care systems, homeopathy, faith healing and so forth. A national health care system encompasses the total network or system of services and provision of care in a country, whether it is 'mainstream' or alternative care. It embraces the national health care system, the environment in which it is embedded and the people it serves. Therefore, the latter would include all four factors of the health field. (Van Rensburg et al., 1992.)

The health care system facilitates the attainment of individual as well as societal goals. The form that it assumes will "reflect the extent of contemporary societal interest and the degree of involvement in the social security of the population" (Kohn & White, 1976, p. 1). As basic needs for food and shelter are satisfied by rising standards of living, communities strive to meet higher level needs concerning actualisation and quality of life. Social services become essential services with increasing urbanisation, where interaction is maximised to achieve societal goals which in turn lead to social health problems such as stress (Kohn & White, 1976). In countries where rapid urbanisation is occurring, populations tend to be mixed leading to competition between people requiring basic services and those seeking services for life enrichment. (See 1.1.1.) Social pressure to meet the needs of different parties will affect the way in which the health care system is organised. Therefore, social values influence the organisation of the health care system implicitly and explicitly. (See 1.1.4.)

#### 4.4.2.1 Components of health care systems

Van Rensburg et al., 1992, identified five universal and inter-related components of a health care system, to be considered when systems are analysed. The first is the human and social-structural component, that concerns all the personnel involved in the health care system as well as the manner in which they are organised. The latter relates to "the nature and extent of division of labour and authority among the personnel, the functional specialization and structural differentiation which exists within and among health care structures" (p. 4). The former includes "the personnel structures and organizations that came into existence around the service providers and direct health care activities", and the systems such as recruitment and training. Examples are professional associations, statutory councils, training colleges and insurance companies. Variations in the organisation of this component occur along the axes of "private - public, magical - scientific, traditional - modern, official - non-official, individual - collective, stationery - ambulatory, preventive - curative, primary - specialized, authoritarian - democratic, centralized - decentralized," and so forth (p. 4).

The second component is the cultural component that involves the knowledge system according to which health personnel define health and illness and render care. This has been discussed extensively in Chapter Two. The normative system whereby these people are regulated in their practice is also included.

The third one is the political-administrative component, that relates to the planning, decision-making, policy, control, management and administration

of the health care system. It is closely linked to the political structure of the country.

The financial-economic component is the fourth one. It is an extremely important one as it includes the remuneration of service providers by consumers, the remuneration of the care providers, the recovery of costs by the consumers and service providers, the financing of services and the ownership of services. Forms of financing range from personal or private household assets, charity, co-operative groups of voluntary insurance, social or mandatory insurance, to general revenues or public taxation.

The fifth component concerns patterns of care, which include the different modalities of care (see Figure 4.3). It embraces: the range of services, such as preventive and promotive care, traditional medicine, self-care, and private and public services; the concrete care structures through which care takes place; and a variety of supporting service structures that although not directly concerned with care delivery, mediate and facilitate it. (Van Rensburg et al., 1992.)

#### 4.4.2.2 Extraneous determinants of the health care system

The health care system functions within the environment and as such is influenced by a number of environmental determinants. Historical developments affect health care systems profoundly, for example the era of separate development and the tricameral parliamentary system in South Africa. The economic system and climate in the country can determine the functioning of the health care system, in terms of such

factors as the gross national product spent on health care, the demand, supply, consumption and cost patterns of health care, and the availability, distribution and quality of services and facilities. The political structure of the country can determine the system through constitutional and statutory dispensations, political ideologies and policies, and pressure groups. They will influence the health care system in relation to equity, accessibility and underprovision of health services and facilities. Other institutional and cultural determinants will affect the system, such as religion, education and cultural practices. Finally, geographical and demographic factors can influence the system. (Van Rensburg et al., 1992.) All these determinants can be categorised under the different dimensions of the environmental factor of the health field.

#### 4.4.2.3 The target population

The clientele or target population, as consumers, affect the health care system, in terms of their health needs, demand for health care and patterns of utilisation (see 5.4). As has been explained in Chapter Three, all of these aspects will be influenced by the perceptions of health and illness. (Van Rensburg et al., 1992.)

The manner in which the health care system, the clientele and the environment inter-relate to influence health is shown in Figure 4.3.

#### 4.4.2.4 National health care system typologies

There are many different ways of categorising the

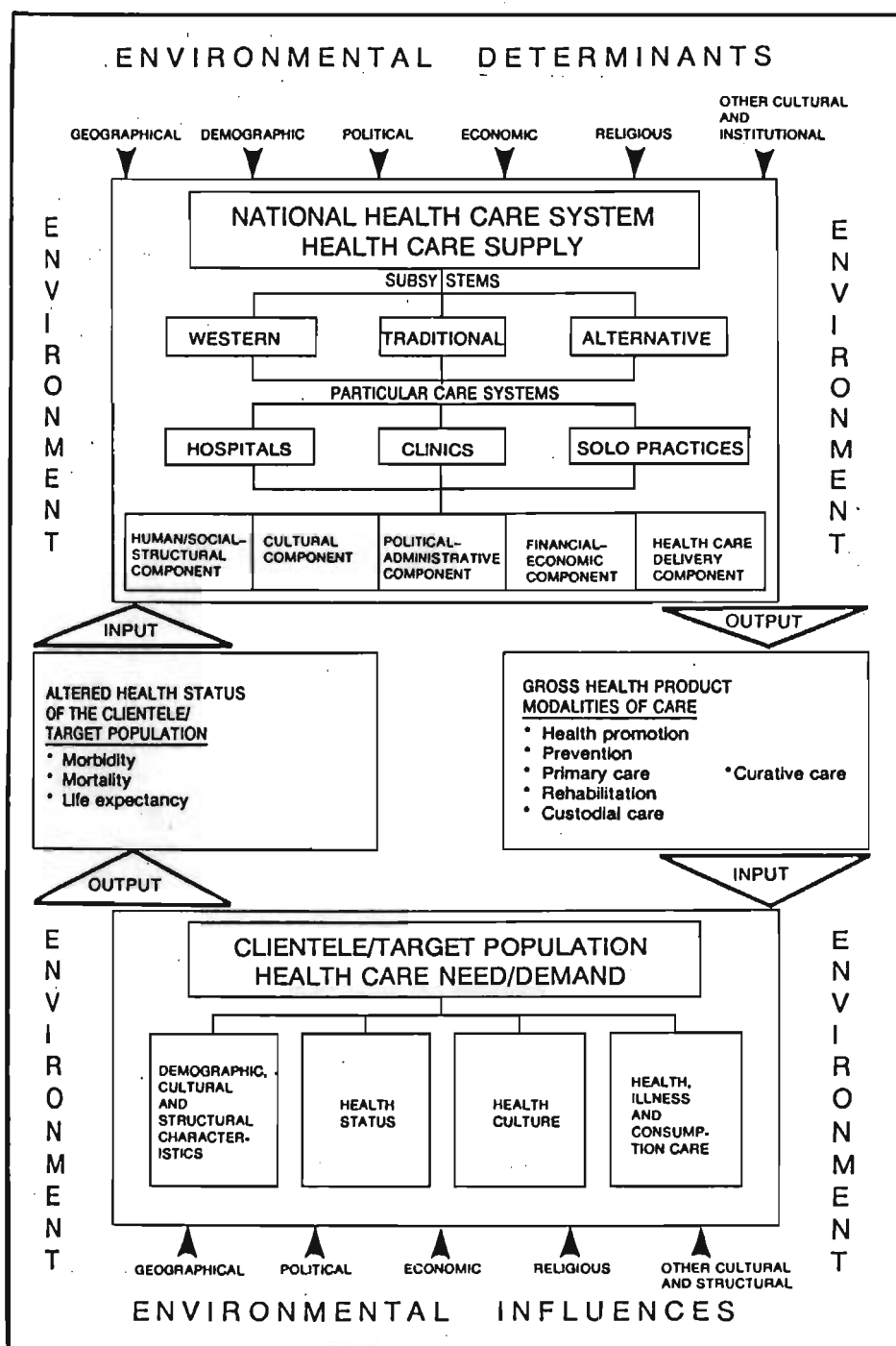


Figure 4.3: The inter-relationship between the health care system and the clientele (Van Rensburg et al., 1992, p. 17)



types of health care system in countries. A useful one was provided by Calnan (1988) who described two pure models of health care provision representing opposite ends of a continuum - in practice health care systems tend to be mixed to a varying extent and in a process of constant change. The first model is based on a system where services are "socialized or subject to governmental regulation as a sort of public utility with the practitioner whose vocation is the practice of his profession on a one-to-one level" having his activities increasingly challenged (Kohn & White, 1976, p. 4). The objective of this system is to offer equity in the availability, accessibility, and distribution of services and resources according to clinical need determined by the state. The Swedish health care system approximates this model.

The second model is based on health care provision determined by market economy, whereby health is conceived in terms of economic goals and services subject to market forces. Emphasis is placed upon "individual choice and consumer sovereignty and it is expected that medical care will usually be financed on a fee-for-service basis". Health care under this system is paid for privately either by the consumer himself or by means of prepaid insurance or employer benefit schemes. In this model, professional control and influence over provision and resource use is prevalent. Unfortunately, there is a greater chance of overprovision for those who can afford care and underprovision for those who cannot, resulting in inequalities in health care.

Yet another simplified approach, in line with Calnan's, is suggested by Van Rensburg et al. (see Table 4.3).

#### 4.4.2.5 The evaluation of health care systems

In the background to the study (1.1.1), it was explained that little significant health improvement could be anticipated with health care organisation as it stands at present. The main reasons for this are that health care is largely reactive, being based on a medical model of health with too much emphasis on cure rather than prevention. Research into the determinants of health has revealed a widening gap between these and the focus of health care policy, basically because health is largely affected by factors outside the health care system (Evans & Stoddart, 1990). Therefore, medical measures that are aimed at specific diseases and the expansion of medical services will not positively affect the health of people.

One of the most important aspects to be considered when evaluating health care systems is the cost and affordability of such care, at both an individual and aggregate level. Health care consumes a major proportion of the economic resources of countries. In South Africa, recent figures reveal that for 1989/1990, 6,4% of the G.N.P. was spent on health and that private sector expenditure amounted to 45% of total expenditure (Department of National Health and Population Development, 1991).

FREE MARKET/PRIVATISED HEALTH CARE	STATE PROVIDED/SOCIALISED HEALTH CARE
1. Principles of individualism, private initiative and ownership, and non-intervention by third parties are paramount in the provision, organisation and utilisation of health services.	The principles of collectivism, statism and egalitarianism are paramount in the provision, organisation and utilisation of health services.
2. Health and illness are regarded as personal matters and the individual's own responsibility.	Health and illness are regarded as collective matters for which society should assume responsibility.
3. Acceptance of the right to health care of the best quality on the basis of financial ability, as well as the right to freedom of choice in respect of both providers and patients.	Acceptance of health care as a basic human right and thus the right to equal and equitable access to and financing of health services.
4. The provision and distribution of services are determined by individual purchasing power according to the prevailing criterium of market justice; health is therefore available to those who can afford it or who are willing to pay for it.	The provision and distribution of services by the state, regulated according to need in accordance with the prevailing criterium of social justice and not according to patients' financial ability or their willingness to pay.
5. On account of the prominence of individual freedom, private ownership and private financing of health services are advocated, with minimal government control regarding the financing of services and the manner in which funds are allocated in the free market.	Health being regarded a collective matter and fair distribution being paramount, centralisation of decision-making, public ownership and extensive government control over financing of services are advocated.
6. Providers are to a large extent private entrepreneurs who are remunerated for their services either directly on a fee-for-service basis or indirectly by means of patients' health insurance.	Providers of health care are state employees remunerated for their services at fixed salaries from public funds.
7. In accordance with the free market or selection criterium the highest quality service at the lowest possible cost is made attainable by adopting the principle of effective competition.	In accordance with the criterium of universality the best service available at the lowest price is possible through public control over and co-ordination of the distribution of services.
8. With regard to policy and administration, the individual entrepreneurial nature of the health care system - characterised by decentralisation, private administration and individual initiative - is emphasised. The organisation of health services according to the free market criterium is therefore not regulated by uniform standards once procedures and is therefore less structured and co-ordinated than state regulated health care.	With regard to policy and administration, the public character of the health care system - characterised by centralisation and public administration - is emphasised. The organisation of health services in accordance with the criterium of universality is regulated by uniform standards and procedures and therefore displays a much more structured and co-ordinated character than privatised health care.

Table 4.3: Privatised/free-market and socialised/state-provided health care systems (Van Rensburg et al., 1992, p. 28)

This enormous expenditure could be rationalised if it produced respectable results. However, as Abel-Smith (cited in McKinley, 1967, p. 544) discovered "the distribution of resources between the various components of health services was inversely related to their effectiveness", with the bulk being spent on curative services as opposed to preventive and promotive services. It has been shown that this has had only a marginally positive effect upon life expectancy rates and quality of life (Fuchs, cited in McKinley 1979), and in fact has probably even had a deleterious effect upon the health of populations because health services have competed with other sectors of the community for resources, that might have made a greater impact on health. The "expansion of health care draws resources away from other uses which may also have health effects." For example, increased taxes to meet health care costs can lower the disposable income of the working population, thereby affecting their ability to make health choices. Therefore, a "society which spends so much on health care that it cannot or will not spend adequately on other health-enhancing activities may actually be reducing the health of its population through increased health spending" (Evans & Stoddart, 1990, p. 1360).

The above point is further highlighted when the costs of ill-health related to life-style and environmental factors are analysed. Pender (1987) gives examples of some of these. In the US, it has been estimated that smokers cost their employers an additional \$600 to \$1800 per person, and that absenteeism rates are 45% higher for smokers than non-smokers. Alcohol abuse, another example, is reported to cost US industry \$40 billion a year, and that

excludes the costs associated with road accidents, crime and fires.

The health insurance schemes have also complicated the situation in that sectors of the population of consumers are not always aware of the cost of health care due to the "third party payment system". The potential result of this is abuse of the system and over-utilisation. Obviously, a fee-for-service system increases the risk of over-provision by profit-motivated practitioners. (Green and Anderson, 1986, p. 30.). Yet another problem is the failure of private health insurance schemes to assist with the costs of primary prevention and health promotion activities. Once again this demonstrates the unbalanced emphasis upon curative aspects of health care which is especially problematic for countries where health care organisation is determined by a market economy.

Health care systems must also be evaluated in terms of the availability, accessibility, acceptability, equity, relevance for health needs, and fragmentation of services and resources (Van Rensburg et al, 1992).

#### 4.4.2.6 An analysis of the South African health care system

The current South African system of health care comprises a combination of public services and private practice. In 1986, the public service was providing 87% of all hospital beds and employed 54% of all doctors and 75% of all nurses. The private practice sector delivers personal health services "in the home, consulting room, and hospital to patients covered by medical insurance or able to pay directly." Under the

Constitution, of 1983 a tricameral Parliament was created to administer the affairs of Coloureds, Indians and Whites, and health services were divided into own and general affairs. In addition, the self-governing and independent Black states were given the responsibility of providing health services for their populations. Health services for Blacks who resided outside these states was provided by the provincial or local authorities on a contractual basis.

Therefore, the social policies associated with apartheid have exacerbated health inequalities as a result of the unequal access to health services. The separation of health resources on a racial basis has led to a costly duplication of services, which are individually less efficient in the use of scant resources than if they were amalgamated under a unitary national system (Benatar, 1986; Uys & Hunt, 1991).

"Racial discrimination, the creation of economically unviable "homelands" with rapidly increasing populations, the inadequate development of primary health care services and community hospitals, the inadequate allocation of resources to health, the maldistribution of medical personnel, and other political regulations and injustices combine to contribute to the prevailing disparity in health and access to medical health care among the people of South Africa." (Benatar, 1986, p. 532)

This system has been widely criticised for the fragmentation of services and the costs associated with duplication which can be ill afforded. (Uys and Hunt, 1991.) As Klecowski, Elling and Smith warned, "pluralistic ideology would undoubtedly be associated with a multiplicity of health programmes and numerous challenges to the achievement of coordination" (1981, p. 8). From the early 1980's, the South African government embarked upon a programme to privatise



health. As noted in 1.1.1, privatisation has had unfortunate effects upon the health care system, principally as it has further decreased the system's ability to provide equity of care. A series of other changes have been made, but these have been largely cosmetic and until there are major political changes to redress inequalities it is unlikely that this costly and ineffective system of health care will alter significantly (Van Rensburg, 1992).

The problems with the South African health care system have been summarised by Van Rensburg et al. as follows:

(a) Shortages of personnel and resources that are exacerbated by maldistribution, especially in terms of concentrations in the urban areas where expectations for care are unnecessarily high;

(b) Fragmentation and deficient co-ordination of the health care supply, which is "divided principally according to race, control, function and geographic area", with "often competing public and private authorities, interest groups and delivery structures", and a noticeable lack of over-arching policy and planning at central level;

(c) Inequality of health care due to socio-economic, racial and geographic (urban - rural) divisions;

(d) Lack of synchronization between need and supply of care, with an emphasis on sophisticated curative medicine; and

(e) Unaffordability of care (1.1.1).



#### 4.4.2.7 Responses to problems associated with health care organisation

The problems inherent with the various forms of health care organisation have resulted in the development of a number of trends, initiated by the lay public and health professionals.

As it has become evident that social and economic factors quite outside the health care system act as determinants of disease, there has been a plea for health improvement through social and environmental management. Instead of medical interventions directed at specific conditions, social and environmental action aimed at a range of problems is promoted as having more potential (McKinley, 1979). In particular, the allocation of funds to health care must be balanced against the needs of other sectors that may be able to make a more appreciable impact upon the health of the community, such as housing, sanitation and education (Evans & Stoddart, 1990).

Cost containment measures are increasingly being sought to curtail expenditure. For example, people are requesting the demonstration of effectiveness before the allocation of funds (McKinley, 1979; Petitti, 1986) through cost-effectiveness and cost-benefit analysis (Pender, 1987; Wright, 1979), as well as the development of performance indicators for patient care (Lister, 1986). Additionally, different forms of "managed care" have been created in some countries. For example, health maintenance organisations (HMOs) and preferred-provider organisations (PPOs) in the US, which are essentially multi-specialty group practices usually funded on a capitation basis with salaried

providers. HMOs and PPOs that negotiate with practitioners and hospitals to procure fixed and lower rates for care are being formed by employers and insurance companies. However, there are many health professionals who view these as an encroachment on clinical freedom. (Naylor, 1987). Unfortunately, attempts to reduce over-utilisation of health care can also have negative effects. In fact, the Browne Commission stated that "there is no system to deter those 'guilty' of over-utilisation without penalising the innocent" (cited in Naylor, 1987, p. 676).

Yet another response to the health care cost crisis has been the increasing emphasis on health promotion as a means of preventing ill-health and achieving wellness. Until recently, there has been little financial incentive for people to adopt such an approach and participate in health promotion programmes. However, moves by some health insurance companies have attempted to change this. For example, the introduction of experience-related membership subscriptions to discourage abuse. In terms of this system, monthly subscriptions will be based upon earlier claims against the scheme. Nevertheless, the fact that these schemes still do not contribute towards the costs of health promotion programmes is a serious oversight. (Pender, 1987; Van Rensburg et al., 1992.)

In response to difficulties and dissatisfaction with the health care system, self-care is becoming an increasingly significant means of meeting health needs as explained in the background to the study. Self-care concerns "the actions people perform to improve their health and wellbeing within a context of everyday life, in which health is rarely the main frame of reference" (Kickbusch, 1989, p. 127). Through it, individuals

attain autonomy and influence over their health care in which they play an active role (Dean, 1989). The range of potential behaviours include "health maintenance, illness prevention, symptom evaluation and self-diagnosis, self-treatment (both non-medical practices and self-medication), self-referral (use of lay social network as a health resource), consultation with a variety of non-medical (alternative) health care practitioners, and the use of professional medical services" (Segall & Goldstein, 1989, p. 154). Thus, self-care utilises medical health services without being solely dependent upon them (Hill, 1985) and as such represents an effort to meet individual health needs in the face of rising health costs and increasing disenchantment with existing health services.

Shuval, Javetz and Shye place self-care in the context of the overall health system, which they describe as comprising a number of inter-related actors, each with specialised roles. These are "the lay person (whose health is under consideration), the lay person's lay reference groups (family, friends, informal informants), physicians (in primary, secondary or tertiary care settings), other health-care providers (a variety of allied health personnel) and alternative health practitioners." Everyone of these actors has goals, norms and values regarding health and their interactions are characterised by a pattern of relations that determine the health outcomes in response to their actions. They point out that the decisions of the lay individual regarding health will be a function of the direct and indirect process of interaction amongst the actors at different times and in varying situations. "The salience and authority of the different actors vary in terms of their expertise, status, legitimation, availability and accessibility to

each other" (p. 234).

The relationship between self-care and life-style has been explained by Dean (1989), who states that discrete practices of individuals are deemed self-care, whilst clustered behaviours and their interactions with cultural, social and psychosocial factors are lifestyles. The self-care components of lifestyle are:

- "1. routine daily habits of living which affect health, eg. smoking, drinking, sedentary routines. etc.;
2. conscious health maintenance behaviour; and
3. behavioural responses to symptoms of illness."

(Dean, 1989, p. 138)

Although many health professionals feel threatened by self-care, it is a trend to be welcomed in general, as health improvements in people require their active involvement. Self-care can improve the efficiency of the health care system by enabling people to make decisions for themselves and initiate health and illness responses that use professional resources in a "self-protecting" manner (Levin, cited in Segall & Goldstein, 1989, p. 160).

Self-medication, as an aspect of self-care, provides a good example to support this contention.

"Responsible self-medication is perceived as valuable by both First and Third world countries, albeit not for the same reason. The First world sees self-medication as a major contributor to cost savings in the health field whereas Third world countries rely on self-medication as a major contributor to health maintenance because of a lack of infrastructure and professional staff."

(Browne Commission, cited in Duncan Reeckie & Scott, 1988, p. 207).

Both perceptions are relevant for South Africa and account for current patterns of self-medication. Duncan Reeckie and Scott contend that self-medication with education and under the guidance of pharmacists is complementary to the health system and can reduce the burden on formal health services, so that the skills of health professionals can be better utilised. However, Folb (1988) has expressed concern over the inadequate infrastructure for patient-directed drug information for over-the-counter (OTC) prescribing, poor general levels of skill in self-treatment, a lack of informed interest in health on the part of the majority of the population, and extremely low levels of literacy, thus rendering OTC self-medication somewhat hazardous. Nevertheless, it is known that considerable self-medication with both allopathic and traditional remedies occurs amongst many people, the effects of which vary between beneficial and extremely harmful.

Consequently, "self-care brings with it the possibilities of reducing chronic illness, promoting wellness, and raising the level of well-being" (Green, cited in Segall & Goldstein, 1989, p. 160). As such, this potential should be recognised when health care systems are planned and evaluated.

#### 4.4.3 Health care organisation in the workplace with particular reference to South Africa

The nature of health care provision and utilisation in the workplace is profoundly influenced by the health care system and the wider environment. Deficiencies in the system will be apparent in the individual and aggregate health needs in the workplace. This is highlighted by Kotze's statement in reference

to South Africa that "because of major socio-economic and political changes over the last two centuries, occupational services are currently dispersed, fragmented and diffused, with numerous departments and organizations responsible for rendering services and executing control" (1992, p. 17).

The structure of occupational health services at national level is dependent on the type of health care system. Where health care is socialised, the state assumes a formal responsibility for such services, whereas in privatised health care it tends to rest with private-sector organisations and their members. The services can be organised under one controlling body for the country or fragmented under many departments. Jeyeratnam (1992, p. 10) recommends that services be organised within the health ministry to ensure that "the basic concern [of these services] is the health of the worker, and that all associated activities in the field of environmental hygiene, ergonomics, safety and so on ..[are]..aimed at achieving this final goal." He notes that countries that have attempted to develop occupational health services under the aegis of their ministries of labour have found that these have been abysmal failures due to duplication of services and the consequent drain on the pool of health manpower.

In the light of the above points, it follows that individual organisations will vary in their commitment to occupational health depending on a number of factors, but primarily the nature of national occupational services. Therefore programmes may range in scope from the mere provision of a first aid box, to safety representatives and a safety officer, to a minor ailments and injury treatment centre or to a comprehensive occupational health programme.



In South Africa, problems in the health care system, inadequate and fragmented occupational health legislation, duplication of administration and no single controlling body for occupational health have contributed to varying standards of care in the workplace to protect workers' health. The particular problems prevailing in developing countries, listed by Elling (1981), as a lack of protective legislation, programmes and personnel, numerous small plants with no protection and the need for improved knowledge and concern amongst employers and employees (228:1981) most certainly exist.

However the new occupational health and safety legislation to become effective in 1994 has the potential to improve the situation. It will be used in conjunction with the Machinery and Occupational Safety Act (No.6 of 1983), to ensure that the health of people at work is protected, to provide for the training and education of occupational health personnel and address occupational hygiene issues, particularly the establishment of safe standards of exposure. It will clearly place the responsibility for protecting health in relation to work on the employer, at the same time emphasising individual workers' responsibilities for observing safety precautions and becoming involved in the occupational health and safety programme.

#### 4.4.3.1 Economic implications of illness in the workplace

The economic implications of illness and health care at an organisational level can be substantial. Under some systems of health care, employers are responsible in varying degrees for the health care costs of their



employees. The US is probably the country where employers are most affected. However, with the system of health care operating in South Africa, similarities exist and therefore a closer examination of trends in the US is considered pertinent. Barick and Jones (1987, p. 661) state that the "cost for workers' compensation and health care benefits is one of the greatest management concerns" due to the alarming rate of escalation of both direct and indirect health costs. It has been estimated that private employers' direct share of expenses amounted to 25% to 33% of the total health expenditure for the country. Five factors have been responsible for these rising costs. These are:

- "1. The effects of the labour force and bargaining representatives on employers for improved health care services.
  2. The expanded medical benefit programs by employers attempting to remain competitive in the labour market.
  3. The increased workers' compensation benefits mandated by states.
  4. The response by health care providers to consumer (employees, dependents, and employers) demands for increasing technology and more specialized care.
  5. The response by insurers to increase premiums to cover insured costs."
- (Barick & Jones, 1987, p. 661)

In relation to these factors, there has been 'a proliferation in the number of persons and services covered, which resulted in a higher frequency, severity, and unit cost of claims' (p. 661). As a result, employers have been forced to examine increasingly innovative strategies to contain costs, whilst still trying to balance the five factors that continue to operate. It is likely that most of the above factors are operating in South Africa to some extent. Certainly, the membership of medical aid schemes has increased markedly, mainly with respect to

Africans who in 1989 constituted 23,6% of beneficiaries compared with 8,9% in 1983 (Van Rensburg, 1992).

On-the-job illnesses and injuries can result in considerable expense to employers due to disruption of work processes, damage to plant and equipment, replacement of trained employees and associated administrative costs (Barick & Jones, 1987). In meeting these costs, organisations are forced to increase the costs of their products, and so pass them on to the rest of the community, which highlights the contention that health is not only an individual responsibility but concerns the whole society.

Off-the-job accidents and injuries account for more loss of productivity and health expenditure than do on-the-job accidents and ill-health (Barick & Jones, 1987). Therefore, occupational health programmes are focussing on these in an attempt to contain costs. To effect this, three objectives must be achieved:

- "1. Improved health status of employees and dependents through stress management, wellness, and fitness programs.
2. Prevention of injuries and illnesses, e.g. immunizations, driver improvement, physical examinations, and so on.
3. Control of medical and health care costs for those injured or ill, for example, utilization management, coalitions, financial planning, and so on."

(Barick and Jones, 1987, p. 663)

#### 4.4.3.2 Worksite health promotion programmes

One of the means of attaining these objectives is through worksite health promotion programmes as it is recognised that ill-health can be prevented through the modification of life-style, because individuals have

considerable control over their own health (Conrad, 1988; Hollander & Lengermann, 1988; Kronenfeld, Jackson, Davis & Blair, 1988; Roman & Blum, 1988; Spilman, 1988; Walsh, 1988; Zimmerman, Gerace, Smith & Benezra, 1988).

Worksite health promotion is defined as a "combination of educational, organizational and environmental activities designed to support behaviour conducive to the health of employees and their families" (Parkinson et al., cited in Conrad, 1988, p. 485). Barick and Jones (1978, p. 666) state that the objectives of worksite health promotion programmes are:

- "1. Provide guidance, motivation, encouragement, and a means for employees and dependents to achieve and maintain their optimal level of wellness.
2. Protect employees against health hazards in their work environment and personal lives.
3. Facilitate job placement and insure the suitability of individuals according to their physical capacities, mental abilities, and emotional makeup to work they can perform with an acceptable degree of efficiency and without endangering their health and safety or that of their fellow workers.
4. Provide for health screening, testing and monitoring, medical care, and rehabilitation of the injured and ill.
5. Maintain record-keeping and reporting systems to measure and evaluate the 'wellness' of employees and dependents as well as to comply with legal, insurance, and company requirements."

It is evident that these programmes are founded on a conceptualisation of health in positive terms.

The translation of the objectives into components usually involves at least one of the following four forms of intervention: health education strategies; evaluation screening to identify past, current and

potential health problems; prescription programmes that are offered on an individual basis to employees to correct or prevent a particular health problem; and behaviour change support services designed to provide the conditions necessary to change life-style (Kotarba & Bentley, 1988; Conrad, 1988).

The aspects featured in programmes include health risk assessments, hypertension screening, exercise and fitness, nutrition, weight control, smoking cessation, backcare, cancer risk screening and reduction, drug and alcohol abuse prevention, cardio-pulmonary resuscitation, stress management, diabetes screening and care, prenatal care, accident prevention and first aid, self-care, and so forth (Barick & Jones, 1978; Conrad, 1988; Hollander & Lengermann, 1988; Pender, 1987).

Programmes vary according to whether they are offered on-site or off-site; are managed by the employer, the employees or a private vendor; are available to all employees or only segments of the worker population (traditionally they were devised for the upper echelons of the organisation); are offered on a continuous or intermittent basis; require participation during or after work time; are offered free or at some cost to the employees; and are promoted by management in the form of incentives such as prizes, monetary or social rewards or are compulsory (as with occupations which are legally required to ensure certain standards of health in their employees eg. airline pilots). (Conrad, 1988; Hollander, 1988; Pender, 1987.)

The potential benefits of worksite health promotion programmes relate to the employer, the

employee and his family, and wider society. A comprehensive list of these is shown in Table 4.4, from Hollander and Lengermann, although it must be noted that a reduction in off-the-job accidents and illness should have been included. In addition to these, Pender notes that "They create a cultural milieu that supports and rewards health-promoting behaviours. The social and physical environments of corporations can be altered to increase their health-enhancing potential...[so] new social norms emerge that positively influence health" (1987, p. 82). Roman and Blum acknowledge that "To a degree the introduction of HPP [health promotion programmes] may represent corporate social responsibility by the employer's voluntary provision of health enhancement to persons who are also members of the larger community' (1988, p. 506). Zimmerman et al. (1988) describe how information from a worksite health programme may be communicated to the family and the wider social network of the participant, possibly resulting in behaviour change.

The concept of health promotion programmes has been widely accepted as being beneficial. However some authors have expressed fears that they could be subject to abuse. Their reservations pertain to the invasion of individual rights, the social control by organisations over their employees, and the possible discrimination against employees who are unwilling to participate in such programmes or change unhealthy life-styles (Hollander & Lengermann, 1988; Roman & Blum, 1988).

The way to avoid such problems lies in employee participation in the planning, implementation and

Table 4.4: Potential benefits of worksite health promotion programmes (Hollander & Lengermann, 1988, p. 492)

Advantages for employers
Reduced health insurance costs
Reduced death and disability benefits
Reduced treatment costs
Reduced absenteeism
Reduced on-the-job accidents
Reduced turnover rates and replacement costs
Increased productivity
Increased worker morale
Increased worker health and quality of life
Advantages for employees
Reduced health-related costs
Reduced transportation and waiting time for health
Reduced sick leave
Increased co-worker and employer support for positive health behaviours
Increased morale based on management's concern for health
Increased satisfaction with health activities
Improved health and quality of life
Advantages for society
Reduced health costs
Improved health and quality of life
Adoption of health promotion emphasis

evaluation of such programmes. It is essential that they are designed to meet the established health needs of employees and that they are acceptable to them (Clemen et al., 1981; Hollander & Lengermann, 1988; Pender, 1987). As Walt noted (1985), it is also necessary to acknowledge that people are not always able to make healthy choices due to a lack of resources. Furthermore, individuals cannot easily control the environment in which they live, and thus are unable to exert an influence upon these determinants of their health status. For this reason,



'victim-blaming' must be strictly avoided. The involvement of workers in occupational health and safety issues is advocated by Howlett and Archer (1986) as a means of participative management. This would entail the establishment of self-help groups of workers for specific work areas, trained to recognise hazards and actively involved in the occupational programme at all levels. The involvement of trade union representatives could also facilitate the protection of workers' health through control of the environment.

#### 4.4.3.3 Employee Assistance Programmes

Many organisations are introducing Employee assistance programmes (EAPs) to assist the employee experiencing personal problems, so that job loss is avoided and the employer retains a valuable member of the organisation. Roman and Blum define the EAP as "mechanisms to increase the chances for continued employment of individuals whose job performance and personal functioning are adversely impacted by problems of substance abuse, psychiatric illness, family difficulties and other personal problems" (1988, p. 504). They state that "EAPs deal with symptoms that have already emerged, attempting to provide early interventions for behavioural problems before they become costly for the employer and the employee and channelling the employee to a source of assistance selected with the guidance of an EAP counselor which will presumably provide the most cost-effective help for the employee's problems."

The researcher contends that these programmes may be considered as secondary prevention measures, whereas health promotion programmes encompass all levels of prevention.



In South Africa this sort of programme and guidance is most often provided by occupational health nurses in most cases as there are not many organisations which are able to offer an EAP with an in-house specialist co-ordinator.

In conclusion, it has been shown that the nature of health care organisation in an organisation and the community will reflect the social value placed on health by that society as well as its concept of health. The manner in which health care is organised will have a profound influence on its use and ability to meet people's health needs. However, health care organisation is neither the sole nor the main path to aggregate health. In pluralistic societies there are different ways of meeting needs and solving problems, and it is necessary to plan to meet these according to a broad base and to use all available sectors and support systems of the community.

#### **4.5 Stress in relation to health and work**

Stress in association with work has been considered separately and in detail because it is increasingly being cited as a major influence on health at all levels. It also demonstrates the manner in which the factors of the health field inter-relate to affect health status. Therefore, the extent and degree to which it exists in an organisation should be identified as a health need so that measures to improve

health status can be instituted. The purpose of this section is to examine the literature regarding the sources of work-related stress and its effects, thereby enabling the assessment of stress in relation to individual and aggregate health status in the workplace.

"Stress is perhaps the most fascinating, controversial, and pervasive concept in the behavioural medicine field" (Anderson, cited in Russel, 1988, p. 3). The controversy centres around the difficulties in defining the term and the complexity of studying its effects. The tendency of the lay public and health professionals to attribute all manner of health problems to stress carries the "very real risk that the resulting popularism and overexposure will dilute the scientific credibility of the concept itself." Despite this, there is a "growing body of evidence linking distressful antecedent experiences to impaired psychological and physiological functioning" (Hurrell & Colligan, 1983, p. 425). In fact, stress is considered to be "the affliction of our age, the handmaiden of the major killer diseases of the Western world", and according to the International Labour Organisation it "continues to ravage all levels of society and that not only senior executives are at risk" (cited in The Natal Mercury, 17 February, 1991, p. 20). Therefore, the quest to understand the condition is particularly important.

#### 4.5.1 Clarification of stress as a concept

The terminology is a "semantic mess" (Brook, 1981, p. 542) because "the term 'stress' has been variously used to describe the disturbing forces, the disturbed balance or disequilibrium, and/or the results of the

counteracting, reestablishing forces" (Chrousos, Loriaux & Gold, 1981, p. 3). They explain that current stress theory is based upon the notion of homeostasis and adaptation. Homeostasis is the steady, harmonious state of mind and body. Stress is the state of threatened balance, equilibrium or harmony. The threats or disturbing forces are stressors, that may be physical or psychological. The counteracting reestablishing forces, known as adaptive responses, may be specific to the stressor or general and independent of the nature of the stressor. Excessive or chronic activation of these responses can in turn threaten homeostasis.

In the early work by Seyle, stress was regarded as a response that was not specific to the stressor. However, subsequent research has refuted this and it is now accepted that it is the recognition of the stressor, in other words the importance the "individual attaches to events and situations and his or her perceptions of them" as well as the response to them that will determine the health outcome (Allman & Zimbler, 1988, p. 113). Clark (1984) and Elkind (1988), who support this standpoint note that the perception of the stressor as stressful, is a response that is mediated by interaction between the individual and his internal and external environment. Past experience and hereditary predisposition will influence an individual's effort to adapt to stressors (Justice, cited in Russel, 1988), as will the vulnerability and resources of the individual. Jewell and Mylander (cited in Chrousos et al., 1988) explain that if the stimulus or stressor is perceived as a threat it will result in distress, whilst a stimulus that is not seen as a threat will lead to eustress, a positive state. Further, stimuli that produce distress share common

characteristics in terms of the emotions they arouse, which are vague, and make the individual feel enraged, hopeless and helpless. The repeated experience of these emotions, whether elicited by internal or environmental stimuli, causes hormonal and other physiological reactions and results in diseases associated with stress.

Hinkle (1987, p. 562) establishes the social dimension of stress which occurs with respect to societal norms and values. It happens when a person "is faced with a situation that implies for him two or more different kinds of behaviour, based on two or more different sets of guidelines and values, which are in conflict and are not readily reconcilable." Modern society is fraught with such social stresses especially in the face of increasing urbanisation and acculturation.

Current dissatisfaction with the imprecise nature of stress as a concept has led to a shift in emphasis away from efforts to measure the type and magnitude of stressors to examining the way that people cope with stress, which is probably a more practical approach (Justice, cited in Russel, 1988) and will be incorporated into the strategy for measuring health in this study.

#### 4.5.2 The physiological basis of stress

Seyle's explanation of the physiological basis of stress is still considered useful. He identified three stages of response to stress and labelled them the general adaptation syndrome (GAS). The first, the alarm reaction, is characterised by an immediate sympatho-adreno-medullary discharge and involves the

mobilisation of defence mechanisms. The second, the stage of resistance, is characterised by activation of the hypothalamic-pituitary-adrenocortical axis during which adaptation is acquired as optimum channels of defence are developed. The individual engages in specific psychological, physiological and behavioural actions to cope with the perceived threat to homeostasis. The third is the stage of exhaustion with depletion of adaptation energy required for coping with prolonged and intensified stress. In this stage a syndrome of adrenal hypertrophy, gastrointestinal ulceration, and thymic and lymphoid atrophy occur. (Clemen, Eigsti & McGuire, 1981; Hurrell & Colligan, 1983; Kopin, Eisenhofer & Goldstein, 1988).

Homeostatic and distress responses differ. Responses to threats to homeostasis are stimulus specific and result in changes that are appropriate to the disturbance. Distress responses tend to be more generalised and are triggered when homeostatic mechanisms are overwhelmed. Homeostatic responses are predictable whereas distress responses vary between individuals depending on constitutional factors and past experiences, as explained earlier. Both involve activation of the sympatho-adreno-medullary system. Nerve networks mediate homeostatic responses, for example the sympatho-neural and para-sympathetic systems. In contrast, distress responses entail hormones including epinephrine, adrenal corticosteroids and vasopressin.

Arousal states arising from environmental stimuli or internal needs can progress to alarm or irritation and then on to panicky fear or aggressive rage. The physiological and biochemical reactions associated with these responses become increasingly intense as the

cycle progresses and when this occurs persistently a variety of psychosomatic syndromes can result. (Kopin et al., 1988.)

#### 4.5.3 Occupational stress

Stress in the workplace has been variously defined. Bulbrook (1983, p. 415) describes occupational stress as "any work-related factor that produces a maladaptive response." McLean (cited in Shostak, 1978, p. 24) states that stressful workplace conditions may lead to a "psychological or physical reaction...usually unpleasant and sometimes productive of symptoms of emotional or physiological disability". Brook (1981, p. 542) notes that "stress at work" refers to "the whole range of difficulties that may occur in the interaction between the individual and his working environment, its only value being to direct attention to general problems in this area." He points out that organisational factors can be more important than individual factors, an observation which will be borne out in the examination of the sources of stress.

#### 4.5.4 Sources of work-related stress

The day-to-day experience at work is one stress producer that seldom appears on rating scales. Yet, if one considers that work can occupy at least forty hours a week, more than sleep even, it follows that it must be an important area to study regarding stress (Jewell & Mylander, 1988). If these "hours are spent in a job which is boring, unrewarding, machine-paced, or marred by unsupportive supervisors and coworkers, the end result is a new kind of health hazard that has only recently been recognised as such" (p. 491). Job stressors can affect the health of all workers, whether

they are white-collar or blue-collar workers and whether they are working in an office setting or on the factory floor. Additionally, it is well known that stress in the personal life of a worker will affect his work performance and that stress generated by a person's job will have adverse effects upon his personal life.

The sources of stress have been categorised as organisational or individual, however there is some overlap between and within the two. Events and conditions in the wider community also contribute to these sources of stress, just as stress in association with work may affect the health of the wider community. It must be remembered that the sources of stress mentioned hereafter have the potential to be stressful only insofar as they are perceived as stressful by the people exposed to them.

#### 4.5.4.1 Organisational stress

Management style, supervision and job satisfaction: The management style adopted in an organisation has a strong potential to produce stress. When a participative management style is used, workers are involved in the decision-making process and planning with regard to their own work, are given responsibility, feel valued, and derive job satisfaction. Where an autocratic, non-participative style is used, workers can be subject to job stress. Argyris (cited in Brook, 1981) states that the employee who has little control over decisions affecting his life at work and thus minimal opportunity for self-expression feels bored and frustrated. Resentment at having to submit for so much time to decisions of others is another problem. Frankenhaeuser and Gardell



(cited in Brook, 1981) state that this can result in demoralisation and depression.

It is being increasingly realised that workers whose jobs are boring and monotonous experience higher levels of stress than people in executive positions even (ILO, cited in The Natal Mercury, 17 February, 1991). Jewell and Mylander (1988, p. 491) put this most succinctly:

"..operators of video display terminals are subjected to some of the most relentless physical and psychological pressures in the workplace. Their jobs are paced by machines that impose inflexibility, lack of privacy, and production quotas. Workers sit all day at the keyboard and process checks, insurance claims, address changes, and customer orders under the watchful eyes of supervisors who can verify, on their video display terminals, exactly how much work is done. It is the twentieth century counterpart of the sweatshop."

Job dissatisfaction can also result from the failure of management to utilise a worker's skills or recognise his accomplishments (Jewell & Mylander, 1988). Seashore & Barnowe (cited in Shostak, 1978, p. 27) say the "Blue-Collar Blues are predominantly associated with those working conditions that discourage good work performance, impede personal growth, and stifle autonomy and creativity. Having relatively poor fringe benefits is also important."

Petty work rules and continual pressure for more production are other sources of stress. In addition, superiors who are irrational, abusive, belittle employees in front of others or keep subordinates uninformed produce great stress in workers. (Shostak, 1978.) Particularly vulnerable are people who derive much of their personal identity from their work.

(Jewell & Mylander, 1988.)

Powerlessness is a feeling which is especially experienced by people working in a large organisation. Managers who have to try to please pressure groups and who are forced to obey so many regulations, and yet must still carry out their responsibilities find this very stressful. Cumbersome bureaucratic policies engender similar feelings in most levels of worker. Whyte (cited in Jewell & Mylander, 1988, p. 492) studied this and wrote that:

"...individuality is lost not only in the corporate and government workplaces, but in academia, the world of science, and other institutions upon which people depend for survival. Often without realizing it, people expect such institutions to take care of them. Considering the company retirements benefits, health care coverage, life insurance, savings and investment plans, recreation and vacation packages, and discount buying services, institutions indeed appear to do so. But the individual pays a high psychological price for these false securities."

In South Africa, where there has been inequality of opportunities for education and a migrant labour system, many people have been trapped in work situations that afford them little chance of realising their personal life goals. They toil every day at work that may be physically exhausting but mentally unstimulating. At night, they go home to a social environment in which they may not be able to meet their physical, psychological or emotional needs. As a result, they are exposed to stressors on both fronts.

Fears and uncertainty in the workplace: Job security anxiety is a very real source of stress, particularly in the face of a depressed economy and

attempts by organisations to decrease expenditure by labour or staff cuts and increasing automation. Fears of retrenchment cause great stress, as Smith (cited in Shostak, 1978, p. 25) explained, "There's only one thing worse than the stress of holding down an unpleasant job. And that's the stress of holding down no job."

Resentment occurs when certain jobs are sex-stereotyped. Magaziner and Reich (cited in Shostak, 1978, p. 25) observed that "a section of industrial workers, primarily male blue-collar workers...are becoming redundant as the U.S. moves toward an employment structure increasingly dominated by poorly paid jobs that are frequently sex-stereotyped as female." The author contends that this is also the case in South Africa, where many jobs have become stereotyped on a gender and race basis linked to lower rates of pay. In the face of political changes and ensuing affirmative action policies in organisations, many Whites are feeling insecure about their work positions.

Uncertainty can arouse anxiety, depending on the length of time over which it occurs. For some people it can produce eustress, but if the time span is too long, will result in distress (Jaques, cited in Brook, 1981).

Ambiguity in the content of roles at work, especially regarding accountability is another source of stress (Brook, 1981). Some positions engender role conflict, where a person is on the boundary of two groups. For example, a junior manager may recognise the administrative need to implement a decision but be aware of opposition in the workplace to it. Khan et

al. (cited in Hurrell & Colligan, 1983, p. 427) described role ambiguity as a "lack of clarity about objectives associated with the work role, about colleagues' expectations concerning the work role, and about the scope and responsibilities of the job." They found that men who suffered this experienced low self-confidence, high work-related tension, extreme futility and minimal job satisfaction. Conflicting work demands are also associated with depression, decreased motivation and coronary heart disease.

**Workload:** Workload may be differentiated according to nature and amount. With the former, qualitative underload is work that is too easy to do and qualitative overload is work that is too difficult to do. The latter refers to quantitative underload, too little to do, and quantitative overload which is too much to do. (Hurrell & Colligan, 1983). These categories may also occur in combination, for example quantitative overload and qualitative underload is when a person has too much to do but it is unstimulating. Any of these can be perceived as stressful by workers if prolonged. Brook (1981, p. 547) differentiated between overload, which is defined as "a demand for extra work which is within the individual's capacities", and overstretch which is "when the person is stretched beyond his abilities." Brief periods of overload can be a challenge resulting in eustress.

Overstretch commonly occurs with overpromotion, when a person is promoted to a position that is beyond his ability, and can be stressful for the person concerned as well as his co-workers. Brook (1981, p. 548) notes that promotion invariably necessitates an increase in management skills so that the person is able to perform in "situations of conflict, to tolerate

disagreements, criticisms, envious attacks, and unpopularity." This can create problems for the person who is promoted over his group of peers, with whom he may have strong bonds of friendship. In addition, managers need to be able to cope with uncertainty and anxiety. Managers commonly report feelings of frustration as they are no longer able to practise their professional skills when they rise up the organisational hierarchy, for example teachers, nurses, accountants, scientific workers and technicians.

Burnout is an increasing problem amongst people, especially the helping professions, who have unrealistic workloads, seem to accomplish little for their effort and are responsible for others lives. Often they are neither able nor have the inclination to take time off and vacation leave. Initially they feel emotionally exhausted, later becoming cynical about the work and finally may be depressed, negative and lose their zest for life. Burnout typically occurs when workers are naive about the organisation and their expectations of their employers are not met. Unless they adapt to the situation and develop coping skills by readjusting their view of organisational life, distress will ensue with negative effects on their health. (Jewell & Mylander, 1988).

Brook (1981) states that workers who are understretched become dissatisfied, demoralised and mistrust their own abilities, usually expressed as minor illnesses and absence from work.

Income inequities: "Few blue-collarites escape the corrosive doubts about the fairness of their take-home pay, a topic that regularly heads ranked lists of workplace sources of job discontent" (Wallick, and



Shostak, cited in Shostak, 1978, p. 24). In addition, the perks which go with the territory of higher management and executives arouse resentment among workers in the lower echelons of an organisation. For this reason, methods of work evaluation must be sound.

Working conditions: The physical conditions under which work is performed can contribute to stress, whatever the setting. Sources of stress in the office environment can relate to the individual workstation and office planning in general, and include noise levels, light, colours, temperature and workflow. The sick building syndrome is also thought to be, in part, due to stress engendered by modern work areas together with air pollution due to smoking, building materials and poor ventilation. (Lange, 1990; Cape Times, 9 October, 1990). Shostak (1978, p. 25) notes that unpleasant working conditions rank third in polls of job stressors among blue-collar workers and result in "anger at physical discomfort, odours, noise, general neglect and a double standard that protects high housekeeping standards for white-collarites, but allows lower standards for hard-hat employees." Other stressors mentioned were poor ventilation, dirty workplaces, poor lighting, drafts, extreme temperature variations, inadequate ablution facilities and a lack of facilities such as pay-phones and vending machines.

Another source of stress to workers is the threat of health and safety hazards. Media coverage of some of these is increasing knowledge amongst workers and they often complain that management is not honest with them about risks attached to their work functions (Shostak, 1978). Even when hazards are known, organisations are not always conscientious about measures to protect employees. Workers are frightened

to bring this to the notice of authorities in case of reprisals and possible job loss (Howlett & Archer, 1986). Hopefully, improved legislation in South Africa will assist with this problem.

#### 4.5.4.2 Individual stress

**Occupation:** Certain occupations are renowned for being stressful. These include journalism, stock-market and finance related occupations and the health professions (The Natal Mercury, 17 February, 1991). Other studies have demonstrated high levels of stress amongst helping professions and professions that are responsible for other peoples' lives, especially doctors, air-traffic controllers and commercial pilots (Cobb & Rose, French & Caplan, cited in Hurrell & Colligan, 1983).

**Personality type:** Jewell and Mylander (1988) describe a well known phenomenon, the overwork syndrome, that afflicts people who have a compulsive need to work. These people lack the ability to recognise that they are physically and mentally exhausted, and instead complain that they are unable to work harder. They are usually men who are competitive, hurried and perfectionist. In fact, men like the typical Type A personality, that is "characterised by extreme competitiveness, striving for achievement, hyperalertness, explosiveness of speech, tenseness of facial musculature, and feelings of being under pressure of time and the challenge of responsibility" (Bulbrook, 1983, p. 419). "Cardiovascular risk seems especially related to the hostility and anger of the Type A behaviour pattern" (Matthews, cited in Maes, 1987, p. 568). However, Maes (1987) sounds a note of warning against accepting that a Type A pattern is a



unitary phenomenon, explaining that not all the components of this pattern are equivalently related to health status.

**Work status:** People derive personal status from the work they perform. If their job is regarded as being of low status, such as manual work, resentment and frustration can occur and become stressful. Shostak (1978) observes that technological advances have taken away the pride of craftsmanship that previously countered the low status of manual work. Organisations can do much to alleviate or compound this feeling depending on the management style adopted.

**Migrant workers:** Much research has been carried out on migrant workers in relation to psychological disorders. The ILO (cited in McDonald, 1981) stated that the incidence of such disorders is greater in migrants than the local population, however other studies have not been able to demonstrate this due to cultural interpretations placed upon such disorders. Kuo (cited in McDonald, 1981) attempted to identify whether mental illness in migrants is mainly determined by the various stresses of being a migrant or whether migration is part of mental instability. He evaluated the relationship according to social isolation, cultural shock, goal-striving stress, and cultural change, and found that the first two factors seemed to be important predictors of psychological disorders. However, there is no disputing that isolation, loneliness, worry and cultural confusion are part of life for many migrant workers and these must place them at particular risk of distress. The migrant labour system in South Africa developed as a result of influx control measures and certainly not because of mental instability on the part of Blacks. The four factors

studied by Kuo are particularly relevant to the adjustment to urban, industrialised life for workers from rural, agrarian settings.

Lack of support: Workers who lack social support systems are more vulnerable to stress than those who have support. Human loneliness, divorce and bereavement have been found to make people more prone to illness and death (Jewell & Mylander, 1988). Where management is supportive of workers, stress is reduced.

Kobasa et al. (cited in Maes, 1987, p. 568) have shown that resistance to the negative effects of stress is most likely when there is "(a) a deep sense of commitment and purpose in life; (b) a sense of personal control over external events; and (c) flexibility in adaptation to environmental changes."

Apart from income, workers value the opportunities for socialisation that work affords them. Miller and Fry (cited in Shostak, 1978, p. 26) note that "when these needs can be met, a worker has the security of co-worker support, earthy camaraderie, and an invaluable source of tips on where influence lies, where respect is deserved, and where support is forthcoming." Shostak (1978, p. 26) observes that "Distress enters when the common need to be part of the community at work is thwarted by sexism, racism or ageism, and many workers succumb to prejudice-fed internecine warfare." Shirreffs (1982) points out that the absence of meaningful relations and an individual's perceptions of their low social status can decrease resistance to disease. The importance of social support has already been mentioned in 4.2.

Interpersonal difficulties: These difficulties

are liable to arise at work considering the amount of time spent there. The problems that are most likely to cause stress are those between a subordinate and superior. For example, a senior who over or under delegates. In the latter case, this may reflect a lack of trust of the level of responsibility that the subordinate is able to sustain, and so he is not given the chance to participate in decisions affecting his work. Supervisors who are insecure or see subordinates as rivals are also great sources of stress for their workers, especially when they try to foist their own inadequacies upon their workers. Poor communication can also cause great anxiety. (Brook ,1981.)

Cost of work: "Job stressors are an increasing problem even for successful people who are troubled by what it takes to cope with their jobs", note Jewell & Mylander (1988, p. 492). The cost may be measured in terms of jeopardy of personal relationships or compromise of personal ethics.

Women and work: Literature on the sources of stress for women at work abounds. Primarily these relate to the fulfilment of their multiple social and family responsibilities, in addition to work. Many working women complain of physical and mental exhaustion and poor quality of life as a result. Furthermore, gender discrimination in the workplace regarding remuneration, status and promotion still exists, producing such negative feelings as anger, frustration and resentment. Sexual harassment is another issue that women are increasingly reporting as a source of stress for them. Obviously, when these problems arise they may have a negative effect upon her health and that of her family, as well as on her work performance and the relationships in the workplace.

(Jewell & Mylander, 1988; Pender, 1987; Schilling, 1981.)

**Chronic illness:** Chronic illness can cause stress in terms of "the multiple demands for adjustment precipitated by the illness" (Anderson, 1988, p. 5). Not the least of these is the possible inability to perform their work or the need to adjust to alternative work, sometimes with lower pay and the ever present threat of job loss. Undetected chronic disease can also affect work performance and may arouse anxiety in the worker, especially if the decreased performance is identified by the supervisor. Anxiety and stress will in turn exacerbate chronic illness and so a vicious cycle is set up.

Kobasa et.al. (cited in Anderson, 1988) demonstrated that optimistic appraisal and a sense of control, challenge and commitment protect a person under stress from illness risk. Thus, if many of the factors such as adequate support systems, participation in decisions pertaining to work and job satisfaction are present these may act as mediators in preventing a person who is under stress from becoming ill.

**Life events:** A number of rating scales have been developed to rate life events, such as divorce, death of a family member and job loss, according to their potential for stress and provide a measure for life change as a predictor of the possibility of becoming ill. Some examples of these are the Life-Change Index by Holmes and Rahe and the Strait-Trait Anxiety Inventory by Spielberger (Hill, 1985; Pender, 1987). Whilst they have merit, it is interesting to note that recent research has indicated that the small problems of life are perhaps the more potent stressors. The

Natal Mercury (17 December, 1990) reported that there is a stronger link between the small, everyday annoyances and how people feel. The types of problems mentioned included lack of energy, too many social obligations and misplacing items. Researchers did not find these minor problems were symptomatic of the major life events which occur. Jewell and Mylander (1988) report similar findings and give other examples as traffic jams, home maintenance and administrative chores. "Chronic long-term problems are even more erosive" such as "the repression of an executive who can shout at his wife after an argument with his boss, but not vice versa" (p. 495). Capsi et al. (cited in Maes, 1987, p. 567) concluded "that chronic ecological stress exacerbated the effects of daily hassles", thus highlighting the complex nature of the evaluation of stressful events.

In conclusion, it must be emphasised that there is a great deal of reciprocity and interplay between many of the sources of stress discussed here.

#### 4.5.5 Effects of stress on health and work

As with the sources of stress, the effects of stress will be examined in an individual and organisational context, although they are obviously also felt in the community. It is important to remember that some stress is essential for stimulating people, if it is viewed as a challenge it will improve work performance. Stress is needed for growth and survival and the goal should be adaptation to stress not elimination of it. (Hill, 1985; Burgess, Sachtleben & Connor, 1978). It is when stress is persistent, intense and cumulative that negative



effects ensue (Jewell & Mylander, 1988). These effects will adversely affect health and relations at home, in the workplace and the wider community, with far reaching implications.

"Clear evidence to support the proposition that stress causes illness is hard to come by" says Russel (1988, p. 4). He outlines three pathways which need to be examined in relation to this proposition. First, the direct effects of psychological stress upon body systems, especially the hormone system. Second, the effects of stress-influenced behaviours, such as smoking and drinking. Third, the notion that illness is a behavioural response to stress. These are very complex issues particularly as diseases commonly regarded as stress induced take a long time to develop. Nevertheless, there is no doubt that tension reducing behaviours like overeating, drinking and smoking contribute to the development of chronic diseases such as coronary heart disease, hypertension and malignancy. Despite Russel's viewpoint, numerous authors have shown that there is a relationship between negative stress and health impairment. (Hurrell & Colligan, 1983; Jewell & Mylander, 1988; Kiecolt-Glaser & Glaser, 1988). Essentially, how people cope with stressful episodes is of more importance to overall morale, social functioning and physical health (Jewell & Mylander, 1988; Roskies & Lazarus in Russel, 1988). When depletion of adaptive abilities occurs, illness is thought to result. In this regard, Hurrell and Colligan (1983) contend that our understanding of stress-related disorders must involve three levels of analysis:

(a) psychological processes - the personality characteristics will influence the perception of the



event. A Type A personality will be more easily upset by time delays, and these people are more prone to coronary heart disease. Coping styles characterised by helplessness and passivity correlate positively with cancer. Where people have high self-esteem and a sound social support system, the effects of stress are mediated;

(b) coping strategies - the more of these available to the individual, the less likely he or she is to experience negative effects of stress;

(c) work stressors - these have already been discussed in 4.5.4.

#### 4.5.5.1 Individual effects

A number of studies have found correlations between sources of stress and health impairment in individuals. Some of these are listed below:

Increased pulse rate, blood pressure, respiration, mass, and smoking - Bulbrook (1983);

Chronic fatigue, depression, insomnia, anxiety, migraines, emotional upset, ulcers, allergies, lumbago, rheumatic attacks, tobacco and alcohol abuse, heart attacks, accidents and suicides - ILO (cited in The Natal Mercury, 17 December, 1990);

Decreased concentration, shortness of temper leading to interpersonal difficulties and decreased constructive thinking - Dashing Office Furniture (cited in The Sunday Times, 12 December, 1982);

Helplessness leading to illness, hostility and heart disease - Russel (1988);

Boredom and frustration - Brook (1981);

Self-esteem undermined and loss of control - Shostak (1978);

Psychological disorders - Chrousos (1988);

Depression of the immune system - Kiecolt-Glaser and Glaser (1988);

Cardiac disease, diabetes, ulcers and rheumatoid arthritis - Hurrell and Colligan (1983);

Cardiac disease and ulcers - Harrington and Schilling (1981).

Table 4.5 shows the effects of stress in individuals according to Barick and Jones (1987).

#### 4.5.5.2 Organisational effects

The effects of stress at an organisational level are numerous and costly (as shown in Table 4.4). They lower production, efficiency and job satisfaction, and lead to absenteeism, rapid employee turnover, and increased health costs. Recent quantifications of the costs of stress for the U.S. economy include the estimation of \$60 billion in 1990 (ILO, cited in the Mercury 20:1990), \$750 per worker (Burgess, 1978) and \$17 billion in lost productivity (Hurrell & Colligan, 1983). Obviously quantification is difficult as many of the costs are hidden, such as health claims for psychosomatic illness. Although figures are not

available for South Africa, the losses are likely to be significant in view of the widespread existence of stressors.

Accidents and damage: Barick and Jones (1987, p. 672) note that stressed employees suffer one or more of the following symptoms: "fatigue, poor judgement, impaired physical co-ordination, inattentiveness, distorted perception, indecision and intoxication from alcohol and drug abuse" and are thus far more likely to have accidents. They attribute 75 to 80% of all industrial accidents to inability to cope with stress and conflict. Damage and wastage are also associated with stress, at great cost to the organisation.

Workload: With regard to the quantitative workload, studies have shown that the incidence of coronary heart disease and elevated serum cholesterol levels rise, particularly when working hours are excessive or a person has more than one job (Hurrell & Colligan, 1983). In a study of "college professors at a large university, qualitative overload was found to be positively related to job tension and inversely related to self-esteem" (French et al., cited in Hurrell & Colligan, 1983, p. 428). Quantitative and qualitative underload are associated with job dissatisfaction, impaired mental health, coronary heart disease, peptic ulcers and gastritis (Cox, and O'Hanlon, cited in Hurrell & Colligan, 1983).

Organisational structure and climate: Low participation in decision-making, job dissatisfaction and job uncertainty have been related to lower self-esteem, poor physical health, escapist drinking, depression and absenteeism (Margolis et al., cited in Hurrell & Colligan, 1983). Shostak (1987, p. 27)

Table 4.5: The personal and organisational effects of occupational stress (Barick and Jones 673:1987).

<b>PERSONAL</b>	
Alcoholism	Anxiety
Drug abuse	Psychosomatic diseases
Emotional instability	Eating disorders
Lack of self-control	Boredom
Fatigue	Mental illness
Marital problems	Suicide
Depression	Insomnia
Insecurity	Irresponsibility
Frustration	Violence
Health breakdowns, such as cardiovascular diseases	
<b>ORGANISATIONAL</b>	
Accidents	Thefts
Unpreparedness	Reduced productivity
Lack of creativity	High turnover
Increased sick leave	Increased errors
Premature retirement	Absenteeism
Organisational breakdown	Disability payments
Disloyalty	Sabotage
Job dissatisfaction	Damage and waste
Poor decisions	Replacement costs
Antagonistic group action	Inflated health care costs

reports high rates of absenteeism, restlessness, unacceptable work, grievance filing and "retirement at work" in relation to lack of job satisfaction, which explains much about reduced productivity and low morale. Stressed workers who feel resentful, irritable and antagonistic are likely to have a negative effect on interpersonal relations with their co-workers, and thus increase stress for them, resulting in a poor work climate.

**Work pacing:** Work pacing with automation is particularly stressful for workers. Reports of high job dissatisfaction, tension, feelings of anonymity,

underuse of abilities, muscle cramps, nervous disorders and psychosomatic problems such as ulcers, heart attacks and strokes abound. (Hurrell & Colligan, 1983). As pointed out earlier, work pacing is not confined to the factory floor, but also occurs in the office setting, for example with video-display terminals.

Since it has been established that stress is a significant threat to health in the workplace, the strategy will take account of the need to identify potential sources of stress as well as its effects. Methods of assessing stress will be discussed in Chapter Five. To conclude, the following quote by Coppee of the ILO (Natal Mercury, 17 December, 1990, p. 20) again indicates the need for a comprehensive model of health in the workplace as a basis for determining needs, dealing with problems and promoting health:

"More explicitly, the notion of stress challenges our usual scientific conceptions because it bridges physical, mental and social wellbeing. An attack on one means an attack on the others. As long as we continue to compartmentalise man and his health, we will be unable to understand either fatigue or stress." "Instead stress can best be regarded as a complex rubric consisting of interrelated processes"

(Lazarus, cited in Maes, 1987, p. 567).

#### 4.6 Conclusion

This chapter completes the investigation of concepts relating to health, for the construction of the conceptual framework and model of aggregate health in the workplace. The aim has been to explain the contribution and inter-relationships between the four factors of the health field in the determination of the health status of workers.

## **CHAPTER FIVE: THE ASSESSMENT OF AGGREGATE HEALTH STATUS**

This chapter addresses the fourth objective, which is to investigate the approaches and methods used in the measurement of the health status of an individual, the organisation and a community. These approaches and methods will be determined by the manner in which health is conceptualised. They are not necessarily mutually exclusive, tending to overlap in varying degrees and each of them has merits and shortcomings. The information from this chapter will be used to plan the strategy for measuring aggregate health status in accordance with the conceptual framework and model.

### **5.1 The measurement of health status**

Many frames of reference have been used to assess health status (Twaddle, 1979). A biological frame of reference will define health in relation to cells, organs and their inter-relationship. The psychological frame of reference will determine health in relation to changes in feeling states, whilst a sociological frame will define health with regard to capacities for task and role performance. However, the inadequacies of



such uni-dimensional approaches to health have been demonstrated in the preceding chapters.

The actual process of measuring the health involves the attachment of a label or description, that indicates health status (Twaddle, 1979). This process consists "of interaction between an individual and his status definers, in which normative standards of adequacy are applied to the individual in the context of a specific situation, to assess his capacities for present or future role and task performance" (Twaddle, 1979, p. 160). These standards of adequacy relate to capacities, feeling states and biological functioning necessary for task and role performance. This is problematic as what is considered normal for one person may be abnormal for another, depending upon the effects of the condition on the individual and his or her life. Social variability in defining health is largely responsible for this (Twaddle, 1979).

Therefore, although the dimensions of health include biological, psychological and social aspects, the actual process of designation is a social one as it "involves some minimal degree of consensus between the individual concerned and the significant others who serve as status definers" (Twaddle, 1979, p. 150). Where general designations are made, broad criteria will "be provided by virtue of membership in the total population or society." However, these criteria will be specified in different ways for subpopulations due to the operation of different values, and then even further differentiation in specification occurs in the interaction contexts "in which the specific other people who are involved in the problem of defining a status may apply different criteria." Consequently,

criteria will vary with the culture and on an individual basis. Figure 5.1 shows how an individual's health status may vary depending upon the definer and the degree of agreement between the individual and others. In fact, so great is the variability that it is possible "to die of a disease without ever being sanctioned as sick by the society itself" (Caudill, cited in Miguel, 1979, p. 386).

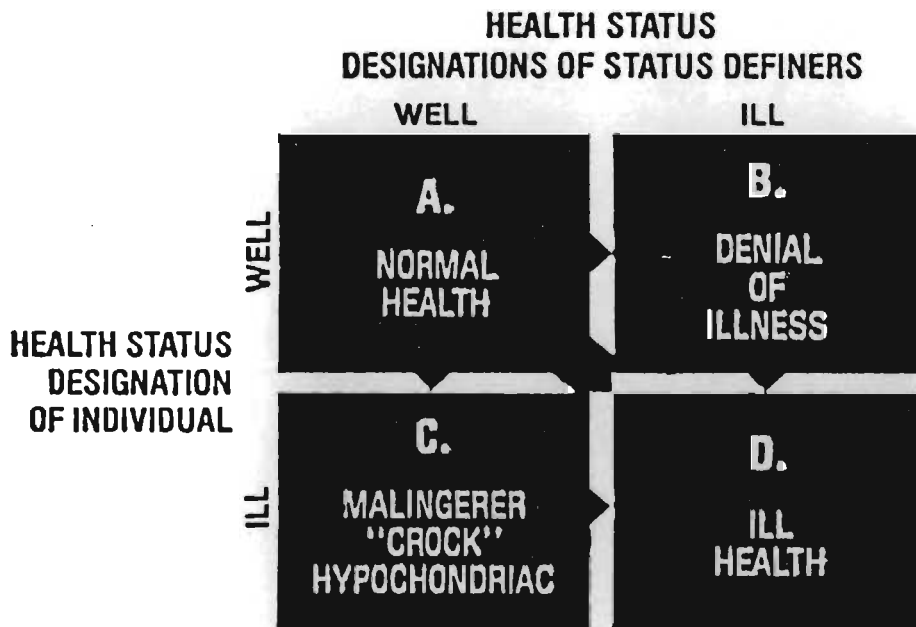


Figure 5.1: Health status designation according to who is defining it (Twaddle, 1979, p. 152)

With regard to certain conditions, universal consensus will be reached (Box D of Figure 5.1), however this accounts for a very small number of conditions and states. From the medical point of view, physicians have traditionally measured health status according to the presence of signs and symptoms. The former are directly observable events, such as blood

pressure, laboratory tests and palpable masses, and are considered objective criteria. Twaddle (1979, p. 158) refers to them as "objective phenomena which relate to measurable parameters of biological or physical functioning, and which predict outcomes relative to the continuity of the organism." Symptoms, on the other hand, are more subjective as they are reported by the patient and are not always directly observable by the doctor (Twaddle, 1979). On the subjective nature of illness, Illsley (cited in Alderson, 1983, p. 243) noted that self reports could be measuring something more than objective clinical assessments, and in fact he found that "subjects' health-related behaviour is more closely linked to self-perception than to assessment by medical examination." However, Hoffman, Pick, Joubert, Yach, Thomas and Kloppe note that an "individual's perception of his or her own health has been shown to be a good predictor of future morbidity and may be more reliable than a physician's assessment" (1988, p. 361). Signs are not always unambiguous, as "there are many parameters of measurable biological functioning which may or may not be consistent with one another" and "standards of normality are not necessarily fixed for any one of these measures" (Twaddle, 1979, p. 147). Variations can be due to the natural growth and development and aging processes, as well as inter-individual variations in normal individuals. (See 4.1.)

The over-riding conclusion to be drawn from the foregoing is that health status assignation must involve a combination of objective and subjective dimensions as has already been clearly indicated in Chapter Two.

For the purposes of a study such as this, the

actual measurement of health status is a process that involves a number of steps. The concept must first be specified and then translated into an operational form as a variable or group of variables, that may be measured by means of indicators and categories (Kohn & White, 1976). Because the concept is represented by a composite of variables the measurement process must also include the testing of empirical correlations among separate components. The process is subject to errors at two points (see Figure 5.2). Firstly, the "correspondence between the variables and their indicators and the conventional intention of the concept may be loose" (construct validity). Secondly, the measurement techniques themselves may introduce bias, as a result of "systematic lack of correspondence between indicators and real events, or be unreliable (Kohn & White, 1976, p. 25). Due regard will be given

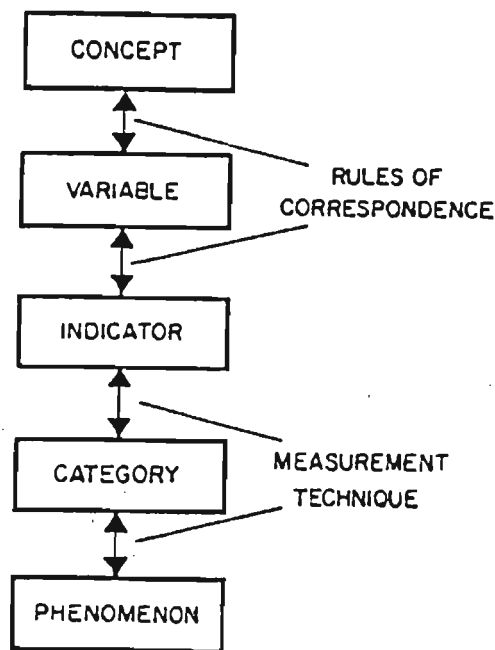


Figure 5.2: The measurement process (Kohn & White, 1976, p. 25)

to these problems when variables are selected in developing the strategy for measuring aggregate health status in this study.

## 5.2 The epidemiological method as an approach to health status measurement

The epidemiological method will probably provide the most useful approach to measuring health status for this research, as its focus is on aggregate as opposed to individual health. Furthermore, it can accommodate the study of health status according to a comprehensive conceptualisation of health.

Collie (1988, p. 4) states that epidemiology is "distinctive as a methodology rather than a specific set of empirical facts." As such it "adopts and adapts a wide variety of methods from clinical and laboratory medicine", and uses statistical tools that are in part specific to the field and in part common to demographic or biomedical research and econometrics (Karvonen, 1986, p. 2).

According to Last (1987), the study of the distribution of health and health-related states and events using the epidemiological method, will focus on pertinent characteristics, such as age, gender, race, occupational and social characteristics, place of residence, susceptibility, exposure to specific agents, genetic traits, health-related behaviour such as smoking, exercise and alcohol use, as well as health and sickness behaviour. The time dimension may also be examined, for example trends, cyclic or secular patterns, and the intervals between exposure and the

onset of health problems. The study of determinants of health and health-related states and events through the epidemiological method may involve the examination of the necessary and enabling factors. Of particular relevance will be the host factors related to individual susceptibility and environmental factors that expose the host to the agent. These factors may include age, gender, ethnic group, genetic background, and physical condition, whilst environmental factors are generally concerned with life-style and living conditions.

In conclusion, Last notes that the use of the epidemiological method can provide a health information system, that is "the combination of vital and health statistics from multiple sources, used to derive information about health needs, health resources, costs, use of health services, and outcomes of use by the population of a specified jurisdiction." As this information relates to the influences on health that the were categorised into the four factors of the health field in the last chapter, it is clear that the epidemiological method would be appropriate for this study.

### 5.3 Indicators and indices of health status

Earlier it was explained that the process of measuring health concepts can be operationalised into variables that will then be measured by indicators. A brief review of the use of health status indicators is therefore necessary at this point. In literature on this subject, the terms 'indicator', 'index' and 'indices' are encountered and it is advisable to clarify these.



Indicators are "those measurements of variables that indicate certain conditions of interest", whereas an index (plural 'indices') is used when referring to "exactly defined numerical measurement scales" (Ipsen, 1979, p. 15). For example, questions pertaining to indicators of functional ability could be graded numerically in order of intensity. The responses would then be assigned a number that would become an index of that condition. They are intended to give a numerically quantified indication of the variable. Indices are used in statistical computations such as means and correlations, and some may be made up of weighted sums or products of single measurements. In some cases, indicators can serve as "indirect or proxy indicators of health", for example age, alcohol, exercise or smoking habits. If these are strongly associated with direct measurements of health they are called determinants or predictors of health. Ipsen (p. 13) maintains that health can only be measured indirectly and through measures of "the occurrence of specific diseases, syndromes, and conditions - and individual and collective behaviour and attitudes toward health-related matters." The utilisation and availability of health services for groups are used as proxy measures to estimate levels of health need for health care and to identify populations at risk from disease.

In view of the variability in measuring health as discussed in 5.1, it is neither feasible nor desirable to attempt to develop a universal, composite scale of health for all situations, although many researchers have tried to do so. Global or general indicators are of little use as they are not sufficiently specific for situations (Haro, 1979).

In theory, a measurement pertains to "conclusions made by comparing observations with something that can serve as a standard." However, in practice, these can vary in exactness, whilst some aspects are very difficult to quantify at all and are evaluated according to impression (Haro, 1979, p. 18).

Kohn and White (1976) also note the lack of success in developing a single indicator for levels of health. They cite the use of life expectancy, disability, and level of functioning as the most commonly used global indicators. However, these are not wholly adequate as they do not take account of prognosis. For this reason they contend that any indicator of health must include "some measure of the severity of deviance from health" (p. 59). They illustrate this with the example of winter colds, that have a high prevalence rate, involve disability, but carry an excellent prognosis for recovery. They must be assessed with respect to the impact on health services in terms of expected man-days of social dysfunction.

Townsend and Davidson (1988) make a plea for the need to amalgamate a number of factors rather than depending on traditional indices of health such as mortality and morbidity rates, so that the real experiences of the population are captured. Culyer (cited in Townsend et al., 1988) suggests a combined indicator of pain and restricted activity, whilst Sackett et.al. (cited in Townsend, 1988) propose the use of indicators representing social, emotional and physical functioning.

From the above, it is concluded that indicators must be selected with particular reference to the

reason for wishing to measure the health status of individuals or populations, and an understanding of how the indicators are made up and are to be used.

### 5.3.1 Indicators of health status

There are many types of indicators, some of which are described hereafter.

#### 5.3.1.1 Social indicators

Social indicators reflect "the social, cultural, and economic milieu in which people are born, live, work, and die, are fulfilled or unfulfilled, healthy or unhealthy." As such, they include "measures of educational achievement, adequacy of exercise and recreation, nutrition, transportation and communications, housing, delinquency, criminality and workings of the judicial system, productivity, consumption and economic welfare" (Kohn & White, 1976, p. 397). Social indicators "relate to social conditions and factors that affect health status directly or indirectly, or the use of health services - for example, indicators of educational and cultural levels, of the status of women, of housing and of environmental conditions" (WHO, 1981, p. 11). A number of social indicators that are frequently used are listed by Smith (cited in Logan & Dawkins, 1986, p. 219) as being:

- "\* Spatial arrangements of the community's people and institutions
- \* Descriptive epidemiological parameters of the population, such as age, sex, socio-economics
- \* Social behaviour - particularly crime, substance abuse, family patterns, and morbidity and mortality rates
- \* General quality of living - for example, substandard housing, overcrowding,

accessibility to services, and economic conditions"

The measurement of social class by indicators has been discussed in 3.4.2.1.

#### 5.3.1.2 Quality of life

The measurement of health in positive terms generally necessitates some assessment of quality of life (see 2.3). As with health, this concept is somewhat elusive and is variously referred to as life satisfaction, self-esteem, well-being, happiness, adjustment, value or meaning of life and functional status. The dimensions of the concept are also variably described, and include physical, social and emotional dimensions; material well-being; relations with other people; social, community and civic activities; personal development and fulfillment; recreation; activities of daily living; sexual activity; life style; locus of control (Dean, cited in Frank-Stromborg, 1988). It must therefore be concluded that quality of life is a multidimensional, complex concept that may be measured in objective terms, for example socio-economic status with regard to income, occupation, education, housing and air purity, and subjective terms, for example aspirations, frustrations, perceptions and attitudes (Frank-Stromborg, 1988). Evans et al. (cited in Frank-Stromborg, 1988) note that the subjective quality of life is a state rather than a trait, consequently its assessment must be ongoing. This is true of any measure relating to health.

A review of the research leads Frank-Stromborg to conclude that despite the difficulties associated with

the variability of the concept, it is a worthwhile concept to measure. Health is important in determining life status and so health indices have been developed that try to define quality of life as a state of wellness of individuals, with the psychological, sociological and physical dimensions included. One such approach, suggested by Ware (cited in Frank-Stromborg, 1988) utilises a multidimensional strategy including the assessment of mental, social and general status (identified according to self-ratings of health, physical and psychosomatic symptoms) together with diagnostic indicators (for example blood pressure and pulse). A similar approach will be used in this study.

#### 5.3.1.3 Indicators of disability

Kostrzewski (1979, p. 41) has described the activities that active members of a community are expected to be able to perform. These are:

- "(1) preserve their independence as regards essential bodily needs, that is, to feed and dress themselves, observe personal hygiene, and so on;
- (2) move freely about in their surroundings;
- (3) spend time in a manner appropriate to their age, sex, and daily domestic or occupational duties, taking into consideration also the physical movements connected with recreation;
- (4) take an active part in the community and maintain friendly relations with others;
- (5) maintain activity and socioeconomic independence through education, housework, or gainful employment."

People who are unable to carry out these activities on a long-term basis are said to be disabled. In a similar vein, Townsend et al. (1988, p. 38) state that disability is increasingly defined as "restriction of activity, which includes self-care, household management, and occupational and social

activities." Therefore, indicators of disability are based on measures of the degree of performance of these activities.

#### 5.3.1.4 Environmental indicators

Environmental indicators reveal the quality of the physical and biological environment through the use of measures of pollution, according to Kohn and White (1976). The researcher contends that they should also reflect the social environment and more positive measures of the environment, such as its aesthetic features.

#### 5.3.2 Indices of health status

There are a number of indices that have traditionally been used to measure the health status of a population. These include mortality, life expectancy, morbidity and disability (Greene & Simons Morton, 1984). Basically they are negative measures of health, each with specific advantages and disadvantages, again emphasising the importance of the selection and combination of methods.

Mortality indices are useful for a number of reasons, for example age and cause specific mortality rates and changes in population health overtime. However, whilst death is "the least equivocal measure of health" (Last, 1987, p. 43), the accuracy of its recording may be highly questionable (Last, 1987; Whitehead, 1988).

Life expectancy rates are derived from mortality statistics and are useful in indicating the anticipated number of years of life of a population based on



longevity experience. Although they do not measure the quality of life to be expected, they have led to the development of other useful measures. For example, indicators related to life expectancy rates are used for health risk appraisal (see 5.5.1.5). Another example is a refinement that is a more sensitive measure of community health. Called quality-adjusted life years (QALY), it incorporates prevalence of disabilities, activity limitation, hospital stay (bed days), and socio-economic status adjusted for age-gender class (Last, 1987).

Morbidity rates indicate the incidence and prevalence of diseases, but the recording of these may also be suspect. Sources of information will include the use of health services, statistics of notifiable diseases or conditions, health insurance claims and health surveys of the population. Statistics of utilisation of health care may be derived from visits to doctors, clinics, hospitals and other health professionals. Whilst these are useful, Last notes their drawbacks, which include the lack of a denominator for the rates (they rarely serve a discretely defined population) and uncertain denominators (they measure episodes of care and do not indicate the stage of the disease process or incidence). Their inadequacy as measures of health need has also been highlighted in 5.6.

The use of disability measures to assess health represents a move away from the goal of extending lives towards the goal of trying to improve quality of life and functionality (Greene & Simons Morton, 1984). Disability may be differentiated according to short-term or permanent disability, reflected as a percentage of a group with one or more impairments or the

percentage who are unable to be employed due to impairment. Short-term disability is often expressed as the average number of restricted activity days per year for a specified population, with the number of sickness-absence days being used to measure days of lost work (Greene & Simons Morton, 1984; Green & Anderson, 1986). It must be realised that because of administrative and individual variations, use of health services and days of sickness-absence are not valid measures of the extent of disease in a population (Blaxter, cited in Whitehead, 1988). Further criticism of the use of mortality and morbidity statistics as health indices has come from Goldberger et al. (cited in Alderson, 1983, p. 251), who argue that they "may underestimate morbidity with appreciable social or economic impact, and fail to reflect the effects of health care delivery."

#### **5.4 Health needs assessment as an approach to health status measurement**

Another common approach to the indirect assessment of health status, whether at individual or aggregate level, is through the identification and analysis of health needs. Usually, these are discussed in relation to health care planning and thus the demand for health care and the outcome of such care must also be included. As the purpose of this research is to determine aggregate health status in order to identify health needs, and so plan an effective occupational health programme, this approach will be considered in some detail.

The assessment of health needs can be problematic,

mainly because of difficulties relating to who will determine health needs and what action should follow. Acheson, Hall and Aird (1976, p. 147) put it in perspective when they noted that the concept of need "seems to exist yet it eludes the clutches of those who attempt to define it." Possibly this is because these attempts have been based on the characteristic of need as a somewhat static and objective phenomenon, which is far from true.

#### 5.4.1 Terminology relating to health needs

Alderson (1983, p. 222) differentiates between perceived and unperceived health needs. The former concerns a need that "is perceived when the individual or his family identify and acknowledge an 'abnormality' which they know is one for which one would usually see a doctor." This is followed by one of three decisions: 1) not to seek medical care; 2) to make use of an informal health care agency or carry out self-care including self-medication; 3) to seek conventional medical care. Health care professionals may not necessarily agree that all cases of perceived need are correctly identified, according to Alderson. This is one of the contentious areas of health needs assessment, and the conceptualisation of health will determine perceived need. Furthermore, Alderson's position seems to indicate a narrow perspective of health according to which the legitimate assistance for a health need must be care from a doctor or health professional. The more appropriate perspective would be that a health need that is perceived by an individual, organisation or community should be regarded as relevant and not require the approval of a health professional. Such a stance accommodates the variations in health needs between groups, in different

settings or in the same group with the passage of time. Regarding the latter, it has already been stated that as communities develop and expectations increase, then health needs move from basic needs to ennobling needs thereby reflecting their dynamic nature (Kohn & White, 1976; Carstairs, cited in Acheson et al., 1976).

Perceived need is regarded by many as more important than clinically determined need because the "perception of need (whether biological or physical) does not lead to use unless the need itself is of sufficient severity or concern to warrant action, and unless the resources are perceived to be appropriate, available, or accessible at a cost that the consumer can afford or is willing to bear" (Rosenstock, cited in Kohn & White, 1976, p. 15). Perception, in this case, is formed from a complex interaction of past experience, factual knowledge, scientific orientation, and personal factors associated with variables such as education and income. Health behaviour appears to be more influenced by perception than the opinion of health care professionals, whilst the demand for health care is also determined by predisposing and enabling factors. (A more detailed discussion of this area is to be found in 3.6.)

Unperceived health needs, according to Alderson (1983, p. 222) pertain to any "condition that is unrecognised by an individual or his family, but is potentially discoverable by a practitioner on careful investigation of the total physical, mental, and emotional well-being of the individual, using standard and accepted criteria." These conditions include those that may be positively influenced by prevention, management or specific treatment, as well as those for which there is no current effective intervention. This

introduces the notion of needs amenable to care. Acheson (1979) reported studies conducted to prioritise health needs on the basis of amenability to care rather than on mortality and morbidity data. These involved the listing and ranking of amenable need by diagnosis, procedure and cost. The prevalence and location of such conditions in the community is then studied. The listing takes into account the conditions, their implications and the available resources specific to a community. Table 5.1 shows Hagard's listing, which focused particularly on conditions amenable to behavioural change (cited in Acheson, 1979).

There are many cases where people do not feel ill and yet can materially benefit from health care. Even though they may not demand this care themselves, the need should be identified for them, usually by a health professional, or else by informed members of the community (Acheson et al, 1976). Examples of such cases include the need for immunisation, contraception and the early identification of asymptomatic diseases like diabetes and hypertension. Of course, the latter raises the issue of the cost and therefore the value of screening as this is the classic approach to discovering unperceived need (Alderson, 1983). The attraction of the concept of amenable need is that the cost of identifying conditions that are amenable to care is more likely to be offset by benefit than other approaches.

Carr, Szapiro, Heisler and Krasner (1989) introduce yet another facet of health need when they refer to unmet health needs. These are described as "the differences, if any, between those services judged necessary to deal appropriately with defined health problems or health states and those health services







actually received" (Carr & Wolfe, cited in Carr et al., 1989, p. 705). In terms of this, evaluations must be made "about whether what can and should be done to maintain health and manage illness is actually being done." Once again, who makes these decisions will influence the evaluation. Based on the foregoing arguments in this literature review, it is important that the community and not just the health professional makes the decision. If health care workers alone define the needs the health care system will not cater for all those perceived as important by the lay public and they will have to seek assistance elsewhere. Conversely, services that the community does not perceive as necessary will not be valued or utilised as health professionals planned, and will consequently be wasteful of resources.

Demand for health care is another term that is used when discussing health needs. Alderson differentiates between overt and stifled demand, the latter being "perceived need that the patient, his family and even the family doctor have not translated into need because they believed that facilities were not readily available" (1983, p. 224). Met demand is described as any health need, identified by anyone, that has been satisfied by the health system, whereas unmet demand represents the converse situation. Therefore there is some overlap between unmet need and unmet demand, although unmet need is qualified by who is 'permitted' to identify the need in the first place. The informal or alternative health services and the patient himself tend to cater for stifled demand. A health service that is based upon demand reflects the assumption that the individual is responsible for his health, rather than the community, as it is dependent

on the recognition for the need for care by the individual (Epstein & Eshed, 1988).

Lastly, the outcome of health care is another aspect to be considered when health needs are determined. It relates to the effectiveness of care, that is whether it alters the course of an illness positively (Cochrane, cited in Alderson, 1983), and the patient's satisfaction with it. The researcher contends that this definition should be broadened so that it includes health care to raise health status to high level wellness. Evaluation of health care is described in 3.6, whilst 4.4 deals with the effectiveness of the health care system.

#### 5.4.2 Strategies for assessing health needs

It is clear from the preceding discussion, that the measurement of health need is value-laden because it is dependent upon who is defining the need. Many adopt the approach that people whose ability to function is below the norm, for physical, mental or social reasons, require health care (Alderson et al., 1976). In a similar vein, White (cited in Holland et al., 1979, p. 69) states that "for indicators of need it is possible to set specific levels above which the need may be interpreted as reflecting a situation where use of health services is necessary." The levels are used as norms or cut-off points and are often referred to as normative needs. Such needs may be medically, individually or socially defined. However, as already been explained, problems arise with medically defined normative needs when professionals disagree over the acceptable standard or when the professionals' standards are not the same as those of the clients (Ewles & Simnett, 1985) because norms reflect the

perspectives of those doing the defining.

Instead, Mooney (1979, p. 52) suggests that instead of trying to determine need in an absolute sense it should be accepted as "a relative concept in the same sense that there will normally be a consensus that some needs are more important than others, which is to say that those needs, if met, would result in a greater increase in health or satisfaction obtained." He contends that it is the very effort to define need in an absolute sense that has mitigated against the discovery of a mechanism to determine it. Rather, the determination of relative priority in meeting different needs in terms of resources is the more sensible approach. In view of the cost of health care and its frequent ineffectiveness, as discussed in 4.4, this seems to be a valid argument.

Williams (1979, p. 5), in presenting the health economist's stance, states that need can only be "objective" if the assertion "Individual A needs intervention X" is translated into "If individual A had intervention X then, in everybody's opinion, individual A would be better off." This does not imply that A should have X because it is not known who else "needs" X, how much of X is available and what priorities exist for the rival claimants to have X. Once need is linked to a valuation then it is possible to analyse the action in terms of relative trade-off, that is priorities, cost effectiveness and cost-benefit.

Many different strategies have been proposed for assessing health need, with various degrees of success in the researcher's opinion. The difficulties that have already been identified with measuring it dictate that a comprehensive approach be used.

Alderson calls for such an approach, that takes into account the dimensions of demand, outcome and resources - all facets of the health system, and comprise a blend of information on:

- "1) demography and environment,
- 2) mortality and morbidity,
- 3) health-care needs,
- 4) health resources,
- 5) health facilities,
- 6) utilisation, and
- 7) outcome..."

Kalimo addresses the problem of "the serious lack of comprehensive population-based indicators of need for health services" (cited in Holland et al., 1979, p. 67). He explains that the indicators of total need and unmet need reflect the health level of the individual, whereas the use of health services is reflected by indicators of expressed (or overt) demand. Furthermore, medical, perceived and social needs, whilst inter-related, are not the same as has already been explained. Therefore, because these concepts of need are assessed by different indicators, he suggests a typology of a population as shown in Figure 5.3.

Indicators for all three concepts of need will yield the same result for people assigned to boxes A and H. It is unlikely that box B would contain many people as these would be people with social activity disturbances that produce a need for health care although this is not a medically defined or perceived need. Box C would contain a large number of individuals, these being people who neither perceive the illness nor exhibit restriction of their social activities. People experiencing a disease that is medically defined and socially determined, but which

they do not perceive as an illness will be allocated to box D. People who believe themselves to be suffering from an illness that has not been medically or socially identified will occupy box E. Box F contains individuals who perceive that they have an illness that has been socially but not medically sanctioned.

		MEDICALLY DEFINED NEED			
		NO		YES	
		Socially determined need		Socially determined need	
		No	Yes	No	Yes
Perceived need	No	A No need	B Medically unjustified social need without perceived need	C Hidden medically defined need only	D Medical and social need without perceived need
	Yes	E Unjustified perceived need	F Medically unjustified perceived and social need	G Medical and perceived need without behavioural disturbances	H Unanimous need

Figure 5.3: Typology of population based on indicators of three concepts of need for health services (Kalimo et al., in Holland et al., 1979, p. 68)

Lastly, box G comprises people with a medically determined disease that they have perceived as illness, but which has not caused any disturbance in their social functioning and therefore is not producing any social pressure for remedial action. Populations may be categorised according to this typology, and each would reflect a different distribution depending upon the prevailing problems. It must also be realised that

the same concepts of need may be measured by different indicators resulting in a different distribution for the same population. It is for this reason that great care must be exercised to ensure that the indicators used do in fact measure what is desired. Moreover, a cut-off point in deciding need for each condition must be decided upon (normative need) and this again can vary according to the situation at the time of investigation. This illustrates the dynamic and complex nature of health needs assessment. Whilst the principles are the same, each particular situation requires its own specific design and configuration of indicators. Once more, the reason for the assessment will determine these choices.

Another approach to the measurement of health through health needs assessment is to begin at the level of the individual, which is the simplest, and progress to the more complex collective level (Haro, cited in Holland et al., 1979). At the individual level the person or a significant other perceives a health need that may or may not be translated into a health demand. If assistance is sought from the formal health system, this need is determined professionally and care is given accordingly. Various measurements of such events may be made to serve as indicators of need, for example the number of sick days that an individual reports (they may not be validated as such by a health professional), number of consultations, blood pressure and urinalysis. At the collective level, the focus is upon the aggregate needs, available resources and distributional responsibility.

As with the above approach, Cerkovnij et al. (cited in Holland et al., 1979) present a framework for relating health status to the planning, provision and



evaluation of health care services. They stress that measures of health must be tailored to the needs of each level and that services at each level will have differing objectives and functions. Table 5.2 shows these, but it is important to note that other measures such as those concerning health resources, costs and efficacy and feasibility of treatment should also be considered. It can be seen that there are basic sets of data common to all levels: demographic data to identify risk groups in populations and act as denominators for rates and comparisons; information on families for the determination of genetic and household effects; measures of death, disease and disability; measures of morbidity in terms of health service use; and measures of environmental health hazards. The differences at the levels relate to the focus of concern and the content, scope, specificity, timing, and frequency of reporting. It is these differences that are also responsible for the failure to find a simple, universal indicator of health status for all populations. A major criticism of these sets of data, is that they do not include positive health status indicators.

Acheson (1976, p. 148), advocated a strategy for the prioritisation of needs. The first step is the determination of what "need" is, in terms of specific conditions. This should be identified jointly by the community and health professionals. Whilst this is relatively simple when it comes to the significant communicable diseases, it is more difficult with the chronic degenerative diseases. Trade-offs are usually involved, whereby the value to be derived from providing care must be weighed against the cost of the care, the costs if such care were not provided and what other needs exist. The latter pertains to the possible

Level of organization	Primary objectives of health authorities	Characteristic functions	Priority requirements for health status indicators
Individual care	To promote the health of individuals in the context of their family and micro-social groups	Health counselling and primary prevention Diagnosis and management of illness Supportive and rehabilitative care Referral to other sources of health care and social support	Comprehensive medical record, including indicators of risk and stress factors associated with family, job, and microsocial environment Age, sex, and race-specific reference standards of "normal" physical, biological, and mental function and capacity, fertility, nutritional requirements, and life expectancy Current information on communicable diseases and major health problems in the community
Community	To maintain an effective, efficient, and equitable health services system for the community and its subgroups To reduce mortality, morbidity, and disability from the major diseases and health conditions, or for major risk groups, that are identified for special action	Identification and analysis of community health needs Allocation, organization, coordination and monitoring of community health services resources Operation of special programmes and community-wide services Coordination of health and social services Collection and reporting of health statistics for the community	Demographic structure and trends of the community Statistics on mortality, morbidity, and disability of the community and its subgroups Measures of accessibility and use of community health services and social services systems Detailed statistics on prevalence and incidence of diseases and health problems identified for special action
Subnational, i.e., regional or district	To implement national health policies and plans within the region or district To promote balanced and equitable distribution of health services resources within the region or district	Identification and analysis of differences within the region in health status and needs, and in distribution and use of services Planning, providing guidelines and technical assistance, and evaluation of programmes carried out at a community level Provision of specialized health services for the region such as tertiary care centres, central laboratories, and environmental and occupational health programmes Education of health professionals Operation of comprehensive regional health information system	Comparative profiles of demographic structure and trends for communities within the region Intraregional rates of mortality, morbidity, and disability Summary statistics on use of regional health services Regional and subregional measures of environmental, social, and occupational health hazards
National	To assess the health needs of the country To provide national direction for effective, efficient, and equitable use of health services and related resources	Setting priorities Development of national policies, standards, and norms Allocation of resources between regions, health services sectors, and health programmes Monitoring and evaluation of regional and community health services and programmes	National and subnational profiles of demographic structure and trends National and subnational mortality, morbidity, and disability rates Summary national and subnational statistics on use of services National and subnational indicators of environmental, social, and occupational hazards
International	To promote communication and cooperation between health personnel and agencies of different countries, continents, and subcontinents	Promoting biomedical, clinical, and health services research Operation of comprehensive national health information system Provision of opportunities for exchange of scientific information and technical skills between countries Planning and implementation of cooperative programmes to control communicable diseases, environmental, and other health problems that cut across national boundaries Establishing international standards and classifications such as the ICD Coordination of national research on health problems of common interest	Age, sex, and race-specific national norms of fertility, physical and mental development and capacity, nutritional requirements, and life expectancy National rates of incidence, prevalence, and mortality for major communicable diseases Comparative national statistics on prevalence and mortality for the major categories of noncommunicable diseases and problems such as cancer, cardiovascular disease, virus diseases, mental illness, infant mortality, and malnutrition National trends in birth rates, fertility, population composition, and life expectancy

Table 5.2: Health status measurement at characteristic levels of health service organisation (Cerkovnij et al., in Holland et al., 1979, p. 95)

"better" use of resources, with better defined "in terms of humaneness, of social benefit, or of economic productivity", thus highlighting the importance of community involvement in such decision-making. The second step is establish where the need exists and then thirdly, to identify individuals in such areas. Health professionals are largely responsible for these two steps.

Sonis (1979, p. 90), in discussing the development of indicators to prioritise health needs for particular groups, conditions and care suggests the use of a matrix of different indicators of health levels, for example disease, functional level, and patient satisfaction. (Just such a strategy will be adopted for this study.) He advocates that indicators be devised for determining of priorities, based on the level of development of the population and its health needs in relation to other conditions. These other conditions include prevailing social, economic and cultural problems, the nature of the pressure to solve these problems and the cost and effectiveness of the methods for their solution. These conditions can then be related to the concept of risk for the individual. The risks represent the standard of living in a community and may relate to the following conditions:

- "- lack of basic sanitation;
- prevalence of communicable and parasitic diseases;
- malnutrition;
- lack of, or poor health care (due to geographical, financial, or cultural causes);
- bad rehabilitation facilities;
- poor accomodation;
- unemployment or poor labour legislation;
- smoking;
- urban conditions (such as overcrowding, environmental pollution)."

Meyer and Sainsbury (1975) also suggest that income, standards of housing and sanitation, nutrition, level of provision of health, and educational, recreational and other services may be used as measures of socio-economic status and collectively as standards of living that influence health need and status.

Specific conditions can then be linked to these risk factors as well as the consequent loss of ability and distress, thereby permitting the determination of health needs, and possibly the cause of the condition. From this, decisions regarding the contact or risks can be made, in the light of available resources and their most effective use. This provides a broad view of the health and illness spectrum and considers the entire needs of the population, with both positive (to some extent) and negative indicators included. Therefore, when indicators for a number of conditions are compared it may demonstrate that improvements in other sectors (for example housing and education) rather than the health service are more likely to result in a lowering of risk and an improvement of health (Sonis, 1979). It is clear that this approach embraces the epidemiological method (5.2). For all these reasons, there seems to be considerable merit in this approach.

Zola reviewed and described six methods used to determine health needs (cited in Counte & Christman, 1981):

1. Clinical/epidemiological field surveys in which individuals are tested for a number of conditions. Alderson notes that this is the classic approach to the determination of unperceived need (1983).

2. The measurement of the number of visits to



clinics, doctors, hospitals and so forth, based on the acceptance that need and utilisation of services are the same thing. As has already been shown in this discussion, one cannot assume that this will identify all needs.

3. The examination of the use of non-medical services such as pharmacists.

4. The measurement of withdrawal behaviour in a population (for example, days of absence from everyday activities such as work and school) can be used to represent medical need. However, this assertion is erroneous, as it does not take into account other reasons for this behaviour, such as political unrest and intimidation.

5. The estimation of need on the basis of self-medication rates of prescribed, patent and traditional medicines.

6. The use of self-reports of illness to measure lay appraisal of health need.

Finally, Polit and Hungler outline the strategies used for a needs assessment as a nursing research approach (1985, p. 125). They define this as "a nonexperimental study in which a researcher collects data for estimating the needs of a group, community, or organization." A needs assessment can be conducted by means of the following methods. The key-informant approach involves the collection of information concerning group needs from key individuals, who are assumed to know what these are. Usually, these people are community leaders or people who have knowledge of the health care needs of the group. Questionnaires or interviews are used to gather the information. Another method, the survey approach, collects information about group needs by surveying a sample of the population. All members of the group have an equal chance of being

selected to provide this data, and there is no emphasis upon people with specific authority or knowledge. The indicators approach makes inferences about group needs from statistics available in reports, records and so forth, as already discussed earlier. Having used one or a combination of such approaches, recommendations for the best use of resources are made on the basis of prioritised needs. This is one of the most comprehensive methodologies of those mentioned, and is likely to determine objective and subjectively defined health need. Essentially, a needs assessment is the same as the community assessment, that is described in 5.5.3.3.

To conclude, the strategy to be devised for determining aggregate health status will incorporate a comprehensive needs assessment approach, the salient features of which will be a matrix of indicators that identify health needs perceived by both the occupational nurse and the members of the organisation. In this way, the resultant occupational health programme will be regarded as relevant and appropriate and be more likely to make effective use of resources.

### 5.5 Levels of health status assessment

Just as health is conceptualised in an individual and aggregate context, health status may be assessed at different system levels, namely the individual, organisational (or occupational) and community level, and this will indicate the methods to be used. As has already been advocated in a number of places, it is best accomplished through a comprehensive approach, that uses a combination of methods chosen in accordance with the objectives of the assessment.



### 5.5.1 The assessment of an individual's health status

Obviously, as the purpose of this study is to assess health in the workplace, the primary focus is on adult health assessment. Child health status is relevant only in the aggregate context in terms of its potential to influence the adult worker's health. There are a number of possible components that could be included in the adult health assessment, depending upon the objectives of the assessment. The common ones are briefly reviewed hereafter.

#### 5.5.1.1 Health history

A well planned and conducted health history aimed at assessing past and current health and illness experience has been shown to be the most cost-effective unit of the health screen (Trautliem, cited in Pender, 1987). Information can be obtained by the interview method or a self-administered questionnaire. One format for the adult health history, suggested by Pender, is shown in Figure 5.4.

#### 5.5.1.2 Periodic health examination

The practice of undergoing routine health examinations was encouraged in the past. However, the likely advantages in relation to the costs have been increasingly questioned by many. For example, Pender (1987. p. 107) lists the following deficiencies of such assessment that were identified in The Canadian Task Force Report of 1979:

<p>Name of client _____</p> <p>Address _____</p> <p>Phone number _____</p> <p>Private physician _____</p> <p>Place of employment _____</p> <p>Demographic data on client (age, occupation, marital status, education, religion, and race)</p> <p>Source of referral, if any</p> <p>Date of history</p> <p>Source of history (client or relative)</p> <p>Chief complaint, if any. Nature and duration of health problem, in client's own words</p> <p>Present illness, if any. Chronologic narrative on current health problem: initial onset, setting in which it occurred, whether it recurred or was exacerbated, feelings and symptoms, treatments, response to treatments, meaning of illness to patient. Each symptom should be described by location, quality, severity, onset, duration, frequency, and factors that relieve or aggravate it. Relevant risk factors or family history should be included</p> <p>Past medical history</p> <p>General state of health (client's perception)</p> <p>Childhood illnesses</p> <p>Immunizations (tetanus, pertussis, diphtheria, polio, measles, German measles, mumps, flu, pneumonia)</p> <p>Major adult illnesses</p> <p>Operations (report complications or sequelae)</p> <p>Injuries</p> <p>Emergency room visits</p> <p>Hospitalizations, not already described</p> <p>Obstetrical history (women)</p> <p>Current medications being used, including home remedies</p> <p>Use of coffee, alcohol, other drugs, and tobacco</p> <p>Allergies or drug sensitivities</p> <p>Family and genetic history</p> <p>Age and health or cause of death of immediate family members, i.e., parents, siblings, spouse, children, and grandparents, if known</p> <p>Occurrence of chronic health conditions in members of immediate family, such as diabetes, tuberculosis, heart disease, high blood pressure, stroke, renal disease, cancer, arthritis, anemia, headaches, nervous disorders, mental illness, or symptoms like those of the patient</p> <p>Psychosocial history</p> <p>Birth date and places of residence</p> <p>Family structure</p> <p>Educational history</p>	<p>Significant experiences during childhood and adolescence</p> <p>Marital history</p> <p>Personal values and attitudes regarding sexuality</p> <p>Feelings about self as masculine/feminine</p> <p>Current life style</p> <p>Home situation</p> <p>Significant others and support systems</p> <p>Religious and cultural beliefs that affect perceptions of health, illness, and health care</p> <p>Job history</p> <p>Travel and military history</p> <p>Use of leisure time</p> <p>Financial status</p> <p>Sources of satisfaction and distress</p> <p>Typical day (physical activity, diet, sleep, recreation, and social activities) (Psychosocial factors are further assessed in the life-style and health-habits assessment)</p> <p>Review of systems</p> <p>General: usual weight, recent weight change, weakness, fatigue, fever, chills, dizziness, sweating, anorexia</p> <p>Skin: rashes, lumps, itching, dryness, color changes, changes in pigmented areas or changes in hair and nails, bruising or bleeding</p> <p>Head: headache, head injury, syncope</p> <p>Eyes: vision, glasses or contact lenses, date of last eye examination, pain, redness, excessive tearing, double vision, halos around lights, color blindness, night blindness, photophobia</p> <p>Ears: hearing, tinnitus, vertigo, earaches, infection, discharge, itching</p> <p>Nose and sinuses: frequent colds, nasal stuffiness, chronic discharge, obstruction, hayfever, nosebleeds, sinus pain</p> <p>Mouth and throat: condition of teeth and gums, last dental examination, sore tongue, frequent sore throats, hoarseness, halitosis</p> <p>Neck: lumps in neck, swollen glands, goiter, restricted motion</p> <p>Breasts: self-examination, lumps, pain, nipple discharge, swelling, asymmetry, dimpling, trauma</p> <p>Respiratory: cough, excessive sputum, hemoptysis, wheezing, asthma, bronchitis, emphysema, tuberculosis, tuberculin test, last chest x-ray film</p> <p>Cardiovascular: palpitations, chest pain, heart murmurs, dyspnea, orthopnea, paroxysmal dyspnea, peripheral edema, cyanosis, hypertension, varicose veins, intermittent claudication, thrombophlebitis</p> <p>Gastrointestinal: trouble swallowing, heartburn, belching, bloating, food intolerance, nausea, vomiting, hematemesis, indigestion, change in bowel habits, rectal bleeding or black tarry stools, constipation, diarrhea, abdominal pain, hemorrhoids, jaundice, liver or gallbladder trouble, hepatitis</p> <p>Urinary: frequency of urination, polyuria, nocturia, dysuria, hematuria, urgency, hesitancy, incontinence, penile discharge (male), force of stream, passage of stones or gravel</p>
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#### Genitoreproductive

Male: hemias, scrotal pain or masses, sexual practices, changes in sexual functioning, sexual difficulties, history of venereal disease (if any)

Female: age at onset of menstruation, regularity, frequency, length of periods, amount of bleeding, bleeding between periods or after intercourse, last menstrual period, dysmenorrhea, amenorrhea, age of menopause, postmenopausal difficulties (if any) last Pap smear, itching or discharge, sexual practices, changes in sexual functioning, sexual difficulties, birth control methods, history of venereal disease (if any)

Musculoskeletal: limitation of movement, trauma, pain, heat, redness, tenderness, swelling or crepitus of joints, backache, muscle pains or cramps

Neurologic: fainting, incoordination, seizures, paralysis, local weakness, numbness, tingling, tremors, pain, unusual reactions to heat and cold

Lymph nodes: enlargement, pain

Endocrine: goiter, exophthalmia, excessive sweating, excessive thirst, excessive hunger, polyuria, glycosuria, changes in secondary sex characteristics

Psychiatric: depression, hostility, apathy, phobias, nervousness

Figure 5.4: Format for an adult health history (Pender, 1987, p. 104)

- "(1) contents and frequency of examinations are unrelated to the needs of different age groups,
- (2) tests and procedures are often included in the examination when there is scanty evidence for their effectiveness in case finding,
- (3) many procedures are conducted annually when they could be performed equally effectively at longer intervals, and
- (4) the annual physical examination tends to be used by highly educated and affluent individuals who are not necessarily those in greatest need of frequent monitoring."

For these reasons they recommended that a system of selective examinations be instituted, determined by criteria such as age and gender. The procedures involved are evaluated in terms of risks and benefits, sensitivity, specificity, predictive value, safety, simplicity, cost and acceptability to the client. They suggest four components, these being history and physical examination, immunisation, counselling and laboratory investigations.

The objective and subjective dimensions of health must be reviewed in such assessments, and any incongruence followed up. For example, where the objective assessment does not reveal any problems and yet the client reports ill-health. The importance of questions pertaining to perceived health status, the quality of life and other positive measures has been emphasised in numerous places in this literature review.

#### 5.5.1.3 Physical fitness evaluation

Pender (1987) advocates this type of evaluation as a basis for planning appropriate physical activity in order to maintain levels of physical fitness with advancing age. Information derived from the physical

examination and laboratory tests are the essential features of the evaluation, for example height, mass, resting heart rate, resting blood pressure, cholesterol, triglycerides, glucose and high density lipo-proteins. However, the performance of such extensive tests is not always possible due to restricted resources. Figure 5.5 shows the adult physical fitness evaluation, adapted from Getchell (cited in Pender, 1987). The parameters to be considered include body composition, girth measurements, cardiovascular status, muscle strength-endurance, and flexibility. In planning health status assessments, the validity of techniques must be ascertained.

Name of Client _____		Date _____	
Sex _____	Age _____	Physician _____	
<b>Body Composition:</b>			
Height _____	Inches _____	cm _____	
Weight _____	lbs _____	kg _____	
(1 lb = 0.453 kg; 1 kg = 2.205 lbs)			
Percentage Body Fat _____	percent _____		
Lean Body Weight _____	lbs _____	kg _____	
Fat Weight _____	lbs _____	kg _____	
<b>Skinfolds (mm)</b>			
Triceps _____	_____	_____	Average _____
Subscapular _____	_____	_____	Average _____
Midaxillary _____	_____	_____	Average _____
Suprailiac _____	_____	_____	Average _____
Abdominal _____	_____	_____	Average _____
Thigh _____	_____	_____	Average _____
<b>Girth Measurements (cm)</b>			
Chest _____	Thigh _____	Biceps (flexed) _____	
Abdomen (at waist) _____	Calf _____	Biceps (relaxed) _____	
Hips _____	Ankle _____	Wrist _____	
(1 cm = 0.394 in; 2.54 cm = 1 in)			
<b>Step Test:</b>			
Number of Minutes _____	Stepping Rate _____		
Bench Height _____	Inches _____		
Recoveries (beats)			
1-1 min _____			
2-2 min _____			
3-3 min _____			
Total _____	(Recovery Index)		
<b>Field Tests:</b>			
Bent-Knee Situps _____	(1 min for females, 2 min for males)		
Toe Touch Point in inches _____			

Figure 5.5: Adult physical fitness evaluation (adapted from Getchell, in Pender, 1987, p. 109)

#### 5.5.1.4 Nutritional assessment

The accurate evaluation of nutritional status is difficult and time consuming. Pender lists current mass, percentage body fat, lean body mass, dietary patterns and the nutritional composition of the diet as aspects to be evaluated. It is also important to explore the cultural and social practices relating to food and its preparation, as this also has dietary implications. The accuracy of the information will be determined by the methods used, which range from a diary in which the client records his weekly food consumption, to a checklist for one day, based on client recall.

The validity of the assessment can be affected by such factors as the honesty of the client in recording and reporting information, the method of determining quantities, client memory recall, the quality of the food itself, the period selected in relation to pay-day, food gathering, and the storage and preparation facilities. Furthermore, the conversion of the acquired data into fat, carbohydrate and protein intake is also difficult. In some places, computerised programmes are now available to perform accurate conversions. Additionally, laboratory tests may be used to assess blood glucose levels, plasma, vitamin and mineral levels, cholesterol, high density lipoproteins, and so forth. Another common and more simple method of assessing nutritional status is through the comparison of the individual's measurements against tables of height, mass and percentage body fat for age, and gender. These tables must be appropriate for the population from which the client is drawn. The sophistication of the approach will be determined by

the objective of the assessment and the available resources. Despite the difficulties inherent in the nutritional assessment, it is a very important part of the comprehensive assessment of individuals, as diet is intimately associated with health status.

#### 5.5.1.5 Health risk appraisal

Health risk appraisal is defined as "a method for attempting to estimate individual risk for disease and death in which information from the client's medical history, physical examination, physical fitness evaluation, and nutritional assessment are used with additional information to quantify personal risk factors" (Pender, 1987, p. 119). Health risk appraisal implies the identification of quantifiable health risks for each person, based on their membership of a specific group together with the identified characteristics and established mortality experience of a large group of cohorts with similar characteristics. At present, the diseases identified are those that carry a high mortality rate, due to the fact that the statistics and derived actuarial tables available for health risk appraisal concern mortality. Pender cites Steinbach (p. 120), who made the following points regarding health risk appraisal, some of which have already been discussed in 4.1.

- "1. Each risk factor has independent action of varying intensity
2. The total risk for a given individual for developing any disease tends to increase with the number of risk factors present and the intensity of each risk factor
3. Risk factors interact synergistically, according to rules not yet identified from scientific inquiry."



Threshold of risk is defined as "the value of a risk factor below which the given factor no longer influences the total risk of a given individual for a specific disease. When all the factors are at the threshold of risk, total risk should be at a minimum." Total risk is defined as "the cumulative risk of all factors or summed level of risk for a given individual for a specific disease." (Pender, 1987, p. 120).

Shirreffs has also noted that factors may be additive or multiplicative (synergistic) in producing disease (1982).

In addition, Pender states that risk factors can replace one another, explaining this with the example that hypertension and normal serum cholesterol may carry the same atherogenic risks as normotension and hyper-cholesteremia. Actual risk from a single factor is dependent on the number and intensity of co-existing factors, therefore with increasing age the presence of a number of factors increases the risk (Pender, 1987; Shirreffs, 1982). Health risks may be present due to factors associated with genetic inheritance, age, biological characteristics, personal health habits, life-style and environment (Pender, 1987). Green and Anderson (1986) identify a number of risk factors that maybe used to determine life expectancy, these being race, inheritance, gender, education and occupation, income, marital status, body build, temperament and habits, and blood pressure. Health risk appraisal will involve an assessment of the risk of disease development based on a knowledge of these factors for a particular individual. Obviously, once a realistic appraisal of risks has been made, the individual must be assisted in averting the threat.

In contrast to health risk appraisal, a comprehensive life-style assessment and wellness inventory is characterised by a positive concept of health, that aims to enhance wellbeing rather than just identify risk factors for disease. This would seem to be a more advantageous approach.

#### 5.5.1.6 Life stress review

The sources and effects of stress were discussed in 4.5. The assessment of stress in individuals is usually based on the physiological and psychological signals that indicate disruption of homeostasis, and hence stress. However, it is important to note that the occurrence of a number of these together is indicative of stress, not just one or two, as some of them may easily be attributed to a different cause. Seyle (cited in Clemen et al., 1981) provided a comprehensive list of these (Table 5.3), whilst Jewell and Mylander (1988) produced a more concise one of unconscious reactions to stressors (Table 5.4), each of which can be used to assess the presence of stress amongst employees. Allman and Zimbler (1988) suggested an approach that incorporated measurements of environmental, somatogenic and psychogenic stress, having concluded that individual differences in perception and coping resources make it difficult to define any set of conditions as stressful. This is precisely why Russel and other researchers have called for a shift in emphasis as explained in 4.5.1.

### 5.5.1.7 Life-style and health habits assessment

The objective of this assessment is to evaluate the individual's personal life with regard to its potential influence on his or her health status as a basis for devising a health promotion programme. Figure 5.6 shows the Life Style and Health Habits Assessment suggested by Pender (1987), that consists of

Table 5.3: The physiological and psychological responses to stress, according to Seyle (cited in Clemen et al., 1981, p. 177).

1. General irritability, hyperexcitation or depression
2. Heart pounding
3. Throat and mouth dryness
4. Impulsive behaviour, emotional instability
5. The overpowering urge to cry or run and hide
6. Inability to concentrate, flight of thoughts and general disorientation
7. Feelings of unreality, weakness or dizziness
8. Predilection to become fatigued and the loss of the "joie de vivre"
9. "Floating anxiety"
10. Emotional tension and alertness
11. Trembling, nervous ticks
12. Tendency to be easily startled
13. High-pitched, nervous laughter
14. Stuttering and other speech difficulties
15. Grinding of teeth
16. Insomnia
17. Hypermotility
18. Sweating
19. Urinary frequency
20. Diarrhoea, indigestion, stomach queasiness, vomiting
21. Migraine headaches
22. Premenstrual tension or missed menstrual cycles
23. Pain in the neck or lower back
24. Loss or excessive appetite
25. Increased smoking
26. Increased use of legally prescribed drugs such as tranquilisers
27. Alcohol or drug addiction.

Table 5.4: Unconscious reactions to stressors according to Jewell and Mylander (1988, p. 495).

*	Pounding heart, shortness of breath, sweating, dry mouth
*	Frequent indigestion, diarrhoea or urination
*	Frequent headaches, backaches, muscle spasms or fatigue
*	Susceptibility to colds and viruses
*	Accident proneness
*	Chronically hostile or angry feelings
*	Tension (a grinding, steady reaction to a specific stressor) or anxiety (apprehension unrelated to any specific stressful event)
*	The feeling, "That's more than I can take!"

ten parts, these being competence in self-care, nutritional practices, physical or recreational activity, sleep patterns, stress management, self-actualisation, sense of purpose, relationships with others, environmental control and the use of the health care system. The percentage of behaviours in each category is the basis for the evaluation, however individual responses are also studied. This type of assessment enables health status evaluation for the present time as well as the future, for example immunisation status and safety behaviour. The four factors of the health field are accounted for in this particular assessment instrument.

Other similar life-style assessment questionnaires have been devised by other authors. One from the University of Wisconsin-Stevens Point (cited in Pender, 1987) examined 11 areas of life-style: physical-exercise, physical-nutritional, physical-self-care, physical-vehicle safety, physical-drug abuse, social-environment, emotional awareness and acceptance, emotional management, intellectual, occupational, and spiritual. The Wellness Index (Figure 5.7) designed by

Please place an X before each statement that is true regarding your present way of life or personal habits. That is, what you generally do.

**General competence in self-care (14)**

\_\_\_\_\_ Take 12-15 deep breaths at least three times daily

\_\_\_\_\_ Drink 6-8 glasses of water each day in addition to other liquids

\_\_\_\_\_ Do not smoke

\_\_\_\_\_ Read articles or books about promoting health

\_\_\_\_\_ Know my body contours and physical sensations well

\_\_\_\_\_ Do not take laxative medications

\_\_\_\_\_ Know what my blood pressure and pulse readings should be

\_\_\_\_\_ Protect my skin from excessive sun exposure

\_\_\_\_\_ Know the seven danger signs of cancer

\_\_\_\_\_ Observe my body monthly for cancer danger signs

\_\_\_\_\_ Understand how to correctly examine my breasts (women only)

\_\_\_\_\_ Conduct monthly breast self-examination (women only)

\_\_\_\_\_ Use soft toothbrush regularly

\_\_\_\_\_ Dental floss regularly

Total number of items checked \_\_\_\_\_ Percent checked \_\_\_\_\_

**Nutritional practices (14)**

\_\_\_\_\_ Know about the "basic four" food groups

\_\_\_\_\_ Plan or select meals to meet nutritional needs

\_\_\_\_\_ Eat breakfast daily

\_\_\_\_\_ Eat three meals a day

\_\_\_\_\_ Avoid between meal snacks

\_\_\_\_\_ Drink only small amounts (no more than 3 cups/day) of caffeinated beverages (coffee, tea, or cola)

\_\_\_\_\_ Do not consume alcoholic beverages or do so in very limited amounts

\_\_\_\_\_ Limit intake of refined sugar (junk foods or desserts)

\_\_\_\_\_ Frequently use unprocessed foods or foods without preservatives or other additives

\_\_\_\_\_ Maintain adequate roughage (fiber) in diet (whole grains, raw fruits, raw vegetables)

\_\_\_\_\_ Read labels for nutrients in packaged food

\_\_\_\_\_ Eat more poultry and fish than red meats

\_\_\_\_\_ Chew foods thoroughly and eat slowly

\_\_\_\_\_ Add little or no salt to my food when cooking or during eating

\_\_\_\_\_ Keep weight within recommended limits for my height

\_\_\_\_\_ Avoid frequent consumption of chocolate foods

Total number of items checked \_\_\_\_\_ Percent checked \_\_\_\_\_

**Physical or recreational activity (7)**

\_\_\_\_\_ Walk up stairs rather than riding the elevator

\_\_\_\_\_ Exercise vigorously for 30-40 minutes at least four times per week

\_\_\_\_\_ Regularly engage in recreational sports (swimming, soccer, bicycling)

\_\_\_\_\_ Perform stretching exercises at least four times per week to increase flexibility

\_\_\_\_\_ Participate in individual sports for the pleasure of movement and physical fitness

\_\_\_\_\_ Consider it acceptable to cry, feel sad, angry, or afraid

\_\_\_\_\_ Find constructive ways to express my feelings

\_\_\_\_\_ Have attended training classes or biofeedback sessions to gain relaxation skills

Total number of items checked \_\_\_\_\_ Percent checked \_\_\_\_\_

**Self-actualization (12)**

\_\_\_\_\_ Maintain an enthusiastic and optimistic outlook on life

\_\_\_\_\_ Enjoy expressing myself in hobbies, the arts, exercise, or play

\_\_\_\_\_ Use myself and enjoy occasional solitude

\_\_\_\_\_ Continue to grow and change in positive directions

\_\_\_\_\_ Am happy most of the time

\_\_\_\_\_ Am a member of one or more community groups

\_\_\_\_\_ Feel fulfilled in my work

\_\_\_\_\_ Aware of personal strengths and weaknesses

\_\_\_\_\_ Am proud of my body and my personality

\_\_\_\_\_ Respect my own accomplishments

\_\_\_\_\_ Find each day interesting and challenging

\_\_\_\_\_ Look forward to the future

Total number of items checked \_\_\_\_\_ Percent checked \_\_\_\_\_

**Sense of purpose (4)**

\_\_\_\_\_ Aware of what is important to me in life

\_\_\_\_\_ Have identified short-term and long-term life goals

\_\_\_\_\_ Am realistic about the goals that I set

\_\_\_\_\_ Believe that my life has purpose

Total number of items checked \_\_\_\_\_ Percent checked \_\_\_\_\_

**Relationships with others (11)**

\_\_\_\_\_ Have persons close to me with whom I can discuss personal problems and concerns

\_\_\_\_\_ Engage in competitive sports primarily for enjoyment rather than competition

\_\_\_\_\_ Maintain good posture when sitting or standing

\_\_\_\_\_ Often elevate my legs when sitting

\_\_\_\_\_ Seldom sit with legs crossed or knees

Total number of items checked \_\_\_\_\_ Percent checked \_\_\_\_\_

**Sleep patterns (7)**

\_\_\_\_\_ Get 7 hours of sleep per night (not 11 hours less or more)

\_\_\_\_\_ Wake up feeling fresh and relaxed

\_\_\_\_\_ Take some time for relaxation each day

\_\_\_\_\_ Fall asleep easily at night

\_\_\_\_\_ Sleep soundly

\_\_\_\_\_ Systematically relax voluntary muscles before sleep

\_\_\_\_\_ Sleep on a firm mattress

\_\_\_\_\_ Use a small pillow for sleep that maintains head and neck in a natural position

\_\_\_\_\_ Allow the thoughts and worries of the day to leave my mind, concentrating on positive but pleasant thoughts at bedtime

Total number of items checked \_\_\_\_\_ Percent checked \_\_\_\_\_

**Stress management (11)**

\_\_\_\_\_ Can laugh at myself

\_\_\_\_\_ Frequently laugh out loud with others

\_\_\_\_\_ Maintain adequate vitamin C intake when experiencing high stress

\_\_\_\_\_ Practice relaxation or meditation for 15-20 minutes daily

\_\_\_\_\_ Understand the relationship between stress and illness

\_\_\_\_\_ Create relaxed atmosphere at meal time

\_\_\_\_\_ Forget my problems and enjoy myself when immediate solutions are not possible

\_\_\_\_\_ Enjoy spending time in unstructured activities

\_\_\_\_\_ Perceive myself as being well accepted by others

\_\_\_\_\_ Maintain meaningful and fulfilling interpersonal relationships

\_\_\_\_\_ Communicate easily with others

\_\_\_\_\_ Recognize accomplishments and praise other people easily

\_\_\_\_\_ Enjoy my neighbors

\_\_\_\_\_ Have a number of close friends

\_\_\_\_\_ Thoughtfully consider constructive criticism rather than reacting defensively

\_\_\_\_\_ Enjoy being touched and touching people close to me

\_\_\_\_\_ Find it easy to express concern, love, and warmth to others

\_\_\_\_\_ Enjoy meeting new people and getting to know them

Total number of items checked \_\_\_\_\_ Percent checked \_\_\_\_\_

**Environmental control (4)**

\_\_\_\_\_ When possible, prevent overwhelming changes in my environment

\_\_\_\_\_ Avoid purchasing aerosol sprays

\_\_\_\_\_ Seldom listen to loud rock music

\_\_\_\_\_ Do not permit smoking in my home or car

\_\_\_\_\_ Provide resources to meet my own personal needs

\_\_\_\_\_ Maintain safe living area free from fire or accident hazards

Total number of items checked \_\_\_\_\_ Percent checked \_\_\_\_\_

**Use of health care system (8)**

\_\_\_\_\_ Report any unusual signs or symptoms to a physician

\_\_\_\_\_ Question my physician or seek a second opinion when I do not agree with the recommended treatment

\_\_\_\_\_ Expect prompt, helpful, and courteous personalized service from health care personnel

\_\_\_\_\_ Discuss health care concerns or problems with the health professional most qualified to provide meaningful assistance

\_\_\_\_\_ Have breasts examined at least once a year by nurse or physician

\_\_\_\_\_ Have a Pap smear at intervals recommended by my physician

\_\_\_\_\_ Have a rectal examination at intervals recommended by my physician

\_\_\_\_\_ Attend educational classes on personal health care provided within the community

Total number of items checked \_\_\_\_\_ Percent checked \_\_\_\_\_

**Scoring:** Calculate the percentage of items checked in each category by dividing the number of items that you checked by the total number of items listed in the category (total number of items in each category is listed in parentheses by category title). Record below the percentage of items checked from each category.

Category	Percentage of Items Checked	Rating (see below)
Competency in self-care	_____	_____
Nutritional practices	_____	_____
Physical or recreational activity	_____	_____
Sleep patterns	_____	_____
Stress management	_____	_____
Self-actualization	_____	_____
Sense of purpose	_____	_____
Relationships with others	_____	_____
Environmental control	_____	_____
Use of health care system	_____	_____

For each category, the following scale may be used to evaluate the extent to which the client's life style and health habits maintain or promote personal health.

Rating	Percentage of Items Checked
Excellent	Greater than 85%
Good	75-84%
Average	65-74%
Fair	55-64%
Poor	Below 55%

Figure 5.6: Lifestyle and health habits assessment form (Pender, 1987, p. 138)



Circle the category that most closely answers the question.

1. I am conscious of the ingredients of the food I eat and their effect on me. Rarely, Sometimes, Very Often (R, S, VO)
2. I avoid overeating and abusing alcohol, caffeine, nicotine, and other drugs. R, S, VO
3. I minimize my intake of refined carbohydrates and fats. R, S, VO
4. My diet contains adequate amounts of vitamins, minerals, and fiber. R, S, VO
5. I am free from physical symptoms. R, S, VO
6. I get aerobic cardiovascular exercise. R, S, VO (Very Often is at least 12–20 minutes 5 times per week vigorously running, swimming, or bike riding)
7. I practice yoga or some other form of limbering/stretching exercise. R, S, VO
8. I nurture myself. R, S, VO (Nurturing means pleasuring and taking care of oneself, for example, massages, long walks, buying presents for self, "doing nothing," sleeping late without feeling guilty, etc.)

9. I pay attention to changes occurring in my life and am aware of them as stress factors. R, S, VO (See Life-Change Index—a score of over 300 is considered very stressful)
10. I practice regular relaxation. R, S, VO (Suggested: 20 minutes a day "centering" or "letting go" of thoughts, worries, etc.)
11. I am without excess muscle tension. R, S, VO
12. My hands are warm and dry. R, S, VO
13. I am both productive and happy. R, S, VO
14. I constructively express my emotions and creativity. R, S, VO
15. I feel a sense of purpose in life and my life has meaning and direction. R, S, VO
16. I believe I am fully responsible for my wellness or illness. R, S, VO

Using your answers above to guide you, you can synthesize a graphic picture of your wellness. Each numbered pie-shaped segment of the circle below corresponds to the same numbered question on the preceding page. (They are divided into quarters representing four major dimensions of wellness.) Color in an amount of each segment corresponding to your answer to the question with the same number. The inner broken circle corresponds to "rarely," the next one to "sometimes," the third to "very often." You don't need to restrict yourself to these categories, however, and can fill in any amount in between. You may use different colors for each section if you like.

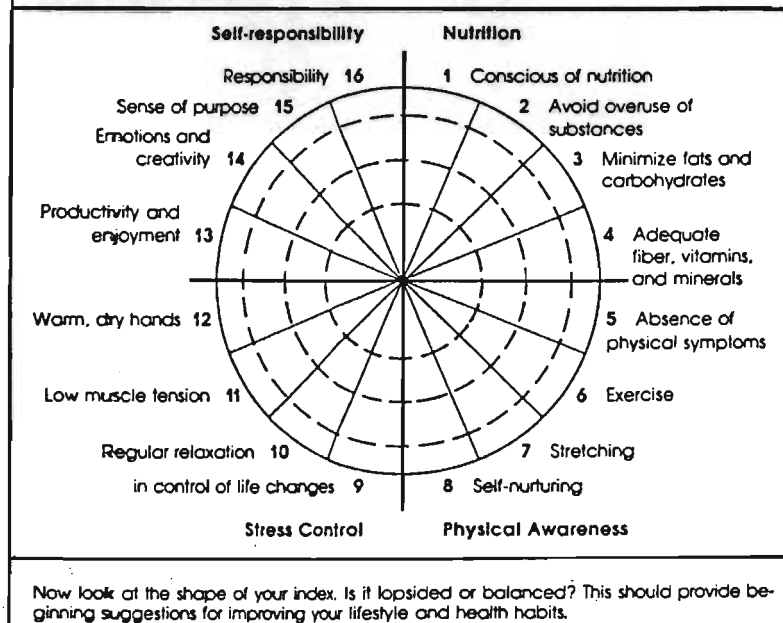


Figure 5.7: Wellness index (Pender, 1987, p. 145)



Travis (cited in Pender, 1987) is a short (16 item) assessment form, the scores from which are displayed graphically. It is ideal for short contact assessment.

#### 5.5.1.8 Health beliefs review

This aims to clarify client beliefs about personal control of health status and is therefore intimately related to their personal definition of health and illness (see Chapter Three). Pender advocates the administration of two forms of the Multidimensional Health Locus of Control (MHLC) Instrument, developed by Wallston and Wallston (cited in Pender, 1987), that enhances the reliability of the results. (See Figures 5.8 and 5.9). There are three important subscales in the instrument, these being internal, chance and powerful others items. The higher the score obtained for the internal subscale, the more the individual believes that he or she is able to exercise control. When the scores for chance or powerful others are high, the converse holds true. It should be remembered that environmental constraints militating against health beliefs and behaviour must be taken into account.

#### 5.5.1.9 Spiritual health assessment

The assessment of spiritual health also forms part of a comprehensive health assessment. The assessment is not intended to be judgemental regarding the nature of the individual's beliefs, rather to focus attention on the "meaning of spirituality and purpose in their lives", as well the implications that these beliefs have for health status (Pender, 1987). Figure 5.10 shows the spiritual assessment guide developed by Young

This questionnaire is designed to determine the way in which different people view certain important health-related issues. Each item is a belief statement with which you may agree or disagree. Beside each statement is a scale that ranges from strongly disagree (1) to strongly agree (6). For each item we would like you to circle the number that represents the extent to which you disagree or agree with the statement. The more strongly you agree with a statement, the higher will be the number you circle. The more strongly you disagree with a statement, the lower will be the number you circle. Please make sure that you answer every item and that you circle only one number per item. This is a measure of your personal beliefs, obviously, there are no right or wrong answers.

Please answer these items carefully, but do not spend too much time on any one item. As much as you can, try to respond to each item independently. When making your choice, do not be influenced by your previous choices. It is important that you respond according to your actual beliefs and not according to how you feel you should believe or how you think we want you to believe.

**1 = Strongly Disagree; 2 = Moderately Disagree;  
3 = Slightly Disagree; 4 = Slightly Agree;  
5 = Moderately Agree; 6 = Strongly Agree.**

1. If I get sick, it is my own behavior that determines how soon I get well again.	1	2	3	4	5	6
2. No matter what I do, if I am going to get sick, I will get sick.	1	2	3	4	5	6
3. Having regular contact with my physician is the best way for me to avoid illness.	1	2	3	4	5	6
4. Most things that affect my health happen to me by accident.	1	2	3	4	5	6
5. Whenever I don't feel well, I should consult a medically trained professional.	1	2	3	4	5	6
6. I am in control of my health.	1	2	3	4	5	6
7. My family has a lot to do with my becoming sick or staying healthy.	1	2	3	4	5	6
8. When I get sick, I am to blame.	1	2	3	4	5	6
9. Luck plays a big part in determining how soon I will recover from an illness.	1	2	3	4	5	6
10. Health professionals control my health.	1	2	3	4	5	6
11. My good health is largely a matter of good fortune.	1	2	3	4	5	6
12. The main thing that affects my health is what I myself do.	1	2	3	4	5	6
13. If I take care of myself, I can avoid illness.	1	2	3	4	5	6
14. When I recover from an illness, it's usually because other people (for example, doctors, nurses, family, friends) have been taking good care of me.	1	2	3	4	5	6
15. No matter what I do, I'm likely to get sick.	1	2	3	4	5	6
16. If it's meant to be, I will stay healthy.	1	2	3	4	5	6
17. If I take the right actions, I can stay healthy.	1	2	3	4	5	6
18. Regarding my health, I can only do what my doctor tells me to do.	1	2	3	4	5	6

**Figure 5.8: Multidimensional health locus of control scale, Form A (Wallston et al., in Pender, 1987, p. 146)**

This questionnaire is designed to determine the way in which different people view certain important health-related issues. Each item is a belief statement with which you may agree or disagree. Beside each statement is a scale that ranges from strongly disagree (1) to strongly agree (6). For each item we would like you to circle the number that represents the extent to which you disagree or agree with the statement. The more strongly you agree with a statement, the higher will be the number you circle. The more strongly you disagree with a statement, the lower will be the number you circle. Please make sure that you answer every item and that you circle *only one* number per item. This is a measure of your personal beliefs; obviously, there are no right or wrong answers.

Please answer these items carefully, but do not spend too much time on any one item. As much as you can, try to respond to each item independently. When making your choice, do not be influenced by your previous choices. It is important that you respond according to your actual beliefs and not according to how you feel you should believe or how you think we want you to believe.

**1 = Strongly Disagree; 2 = Moderately Disagree;  
3 = Slightly Disagree; 4 = Slightly Agree;  
5 = Moderately Agree; 6 = Strongly Agree.**

1. If I become sick, I have the power to make myself well again.	1	2	3	4	5	6
2. Often I feel that no matter what I do, if I am going to get sick, I will get sick.	1	2	3	4	5	6
3. If I see an excellent doctor regularly, I am less likely to have health problems.	1	2	3	4	5	6
4. It seems that my health is greatly influenced by accidental happenings.	1	2	3	4	5	6
5. I can only maintain my health by consulting health professionals.	1	2	3	4	5	6
6. I am directly responsible for my health.	1	2	3	4	5	6
7. Other people play a big part in whether I stay healthy or become sick.	1	2	3	4	5	6
8. Whatever goes wrong with my health is my own fault.	1	2	3	4	5	6
9. When I am sick, I just have to let nature run its course.	1	2	3	4	5	6
10. Health professionals keep me healthy.	1	2	3	4	5	6
11. When I stay healthy, I'm just plain lucky.	1	2	3	4	5	6
12. My physical well-being depends on how well I take care of myself.	1	2	3	4	5	6
13. When I feel ill, I know it is because I have not been taking care of myself properly.	1	2	3	4	5	6
14. The type of care I receive from other people is what is responsible for how well I recover from an illness.	1	2	3	4	5	6
15. Even when I take care of myself, it's easy to get sick.	1	2	3	4	5	6
16. When I become ill, it's a matter of fate.	1	2	3	4	5	6
17. I can pretty much stay healthy by taking good care of myself.	1	2	3	4	5	6
18. Following doctor's orders to the letter is the best way for me to stay healthy.	1	2	3	4	5	6

**Figure 5.9: Multidimensional locus of control scale, Form B (Wallston et al., in Pender, 1987, p. 147)**

**Instructions**  
 People's religious beliefs and philosophy about life are important to them. Most recently, nursing has realized that considering the spiritual dimension in planning nursing care is part of what it means to take a holistic approach. Spiritual assessment is particularly important when an individual family member and family are dealing with some important life event, such as birth, marriage, death, or some other crisis. The following guide is designed to determine significant information that can assist the nurse in helping the client meet spiritual needs.

Family member \_\_\_\_\_  
 Religious preference \_\_\_\_\_  
 Participation in worship and related activities  
     \_\_\_\_\_ regularly, usually every week  
     \_\_\_\_\_ occasionally, such as on special occasions  
     \_\_\_\_\_ rarely, but still identifies with a religious group  
     \_\_\_\_\_ never participates in religious worship or activities  
 Do you have a way of describing God, or deity, that is meaningful to you? \_\_\_\_  
     \_\_\_\_\_  
     If yes, what is it? \_\_\_\_\_  
     \_\_\_\_\_  
 Do you have hope? \_\_\_\_\_  
     If yes, how would you describe the source of your strength and hope? \_\_\_\_  
     \_\_\_\_\_  
     \_\_\_\_\_  
 Is there a clergy or religious leader that you find especially helpful to you? \_\_\_\_  
     \_\_\_\_\_  
     If yes, who? \_\_\_\_\_  
 Describe the importance of the following to you  
     Symbols used \_\_\_\_\_  
     Rituals used \_\_\_\_\_  
     Religious days observed \_\_\_\_\_  
     \_\_\_\_\_  
     Other practices \_\_\_\_\_  
     \_\_\_\_\_  
 Do you have religious beliefs that relate to your dietary practices? \_\_\_\_\_  
     If yes, what are they? \_\_\_\_\_  
     \_\_\_\_\_  
     \_\_\_\_\_  
 What events in your life had an effect on your spiritual beliefs? \_\_\_\_\_  
     \_\_\_\_\_  
     \_\_\_\_\_  
 What are your spiritual beliefs about the following? \_\_\_\_\_  
     God \_\_\_\_\_  
     Birth \_\_\_\_\_  
     Death \_\_\_\_\_  
     Health \_\_\_\_\_  
     Illness \_\_\_\_\_  
     Other \_\_\_\_\_  
     \_\_\_\_\_  
     \_\_\_\_\_  
 As a nurse, is there anything I can do to help you meet your spiritual needs?  
     \_\_\_\_\_  
     \_\_\_\_\_

Figure 5.10: Spiritual assessment guide (Young, in Pender, 1987, p. 151)

(cited in Pender, 1987). Spiritual assessment is not always included as it is an emotive and extremely subjective area to assess. However, there is merit in examining the influences of spiritual beliefs upon the health status of the individual.

#### 5.5.2.10 Work-related individual health assessment

A common problem with the type of individual health assessments conducted by health workers in general health services is the inadequate attention given to the influence of work on health status. However, health care workers providing an occupational health programme perform a range of health assessments, depending upon the reason for doing so. These include:

- \* collection of baseline data on an individual's health, against which subsequent comparisons may be made to determine the influence of work-related exposure (pre-employment and periodic health assessments);
- \* risk assessment (pre-employment, pre-placement and periodic examinations);
- \* facilitation of appropriate placement of workers (pre-employment and pre-placement examinations);
- \* early identification of health impairment (periodic assessment, screening);
- \* identification of the hypersusceptible worker, with regard to work hazards (periodic assessment);
- \* monitoring known health impairment to prevent further deterioration (surveillance examinations);
- \* specific types of assessment, related to the nature of the work, for example bus drivers,

aircraft pilots, food handlers, executives, and people known to be exposed to work hazards such as radiation, asbestos, lead and noise;

- \* assessment of health status upon return to work after injury or illness to ensure that work is conducive to recovery;
- \* establishment of health status prior to termination of employment (or retirement) to ensure that inferior work performance is not due to illness that could be treated and a fair consideration of the situation (occurs in the case of dismissal) or to record health status in the event of subsequent legal action against the employer for health impairment due to occupational exposure or for research purposes.

(Alexander, 1988; Boden, 1986; Frank, cited in Rom, 1983; Harrison, 1984; Holgate, 1977; Rom, 1983; Schilling, 1981; Slaney, 1980; Taylor & Raffle, in Schilling, 1981; Zwi & Ehrlich, 1986.)

In addition to a health history, individual health assessments conducted in the occupational health setting may include an occupational health history, physical examination with anthropometric measures, and specific tests, for example biological monitoring, medical surveillance and psychosocial tests. The occupational health history is extremely important for eliciting information concerning work influences from previous and current work positions, but it is essential that the assessor ascertains the exact nature of the work rather than being satisfied with job titles if the data is to be valid (Schilling, 1981). Some



examples of the questions that can be asked to obtain an occupational history are shown in Figure 5.11 and Tables 5.5 and 5.6.

OCCUPATIONAL HISTORY

A) FOR NEW EMPLOYEES

(i) What job are you going to do for the Company? .....

(ii) When is the proposed starting date? .....

(iii) Please list your jobs, since leaving school, in the table below. The medical department is particularly interested to know of any hazardous materials you may have worked with in the past - such as dust, gases and toxic chemicals.

Date starting job	Date leaving job	Description of Job (including hazardous materials handled)	Employing company

B) FOR CURRENT EMPLOYEES

(i) Give a short description of your current job.....

(ii) How long have you been doing it? .....

(iii) How long have you worked for this Company? .....

Figure 5.11: An occupational history questionnaire (Harrington & Schilling, 1981, p. 52)

WHO (1975, p. 10) has indicated the categories of criteria of health impairment to be used when assessing health changes in relation to work exposure:

- "1. Changes in biochemical and morphological parameters to based in laboratory analysis."
- "2. Changes in physical state and the function of physiological systems, to be evaluated by physical examination, and by means of loading tests."
- "3. Changes in well-being to be evaluated by medical history taking and questionnaires."
- "4. Integrative changes that may result from effects on several physiological systems..." that are not necessarily directly related to work, such as nutrition and communicable diseases.

<ol style="list-style-type: none"><li>1. Occupation<ol style="list-style-type: none"><li>a. What do you do?</li><li>b. How long have you been doing this job?</li><li>c. Describe your work and to what you are exposed.</li><li>d. Under what circumstances do you use protective equipment?</li></ol></li><li>2. Other employment<ol style="list-style-type: none"><li>a. List full-time positions in chronologic order.</li><li>b. List part-time jobs, temporary jobs, second jobs, and summer jobs.</li></ol></li><li>3. Military or wartime exposure (if applicable)</li><li>4. Symptoms or illnesses related to work<ol style="list-style-type: none"><li>a. Describe the timing of symptoms in relation to work hours.</li><li>b. Has anyone else at work suffered the same or similar problems?</li></ol></li></ol>	<ol style="list-style-type: none"><li>5. Nonoccupational exposures that could be related to illness or could be expected to produce problems<ol style="list-style-type: none"><li>a. Smoking: Do you smoke? If yes, in what form (filter or nonfilter cigarettes; pipe; cigar)? At what age did you start? About how many do you smoke per day and for how long?</li><li>b. Alcohol: What kind? How much? For how long?</li><li>c. Geographic history: Did you ever live near a facility that could have contaminated the surrounding area (e.g., mine, plant, smelter)?</li><li>d. Hobbies: Are you exposed to any hazardous materials (e.g., ceramics, metals, glues)?</li></ol></li></ol>
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Table 5.5: Essential details of an occupational history (Frank, 1983, p. 22)

<ol style="list-style-type: none"><li>1. General evaluation<ol style="list-style-type: none"><li>a. Signs of weight loss may be related to a wide variety of exposures.</li><li>b. Cushingoid appearance may be related to work with pharmaceuticals.</li><li>c. Pulse and blood pressure may be altered due to exposure to chemicals, such as nitroglycerine.</li></ol></li><li>2. Skin and hair—occupational skin diseases are the most common occupational health problem. Skin cancers, dermatitis, and alopecia may be related to a variety of exposures.</li><li>3. Eye, ear, nose, and throat<ol style="list-style-type: none"><li>a. Cataracts may develop following exposure to ultraviolet radiation in welding, steel-making, and glassblowing, or following exposure to microwave and radiofrequency radiation.</li><li>b. Hearing loss often results from workplace noise hazards.</li><li>c. Garlicy breath may result from exposure to metals, such as thallium.</li></ol></li></ol>	<ol style="list-style-type: none"><li>4. Chest—respiratory findings can often be related to occupational exposures.<ol style="list-style-type: none"><li>a. Rales, wheezes, and other unusual sounds may often be related to exposure to dusts or allergens at the workplace.</li><li>b. Acute chemically related pulmonary edema can occur following exposure to oxides of nitrogen or phosgene.</li><li>c. Cardiac problems may also be related to exposure, such as arrhythmias following pesticide exposure, or the development of premature arteriosclerosis following exposure to carbon disulfide.</li><li>d. Carbon monoxide exposure may exacerbate coronary artery disease.</li></ol></li><li>5. Abdomen<ol style="list-style-type: none"><li>a. Guarding may be present due to lead colic.</li></ol></li></ol>
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Table 5.6: Questions to ascertain occupational exposure, as part of the occupational history (Frank, 1983, p. 22)

The evaluation of occupational health is complicated by the interaction between host, agent and environment, multiple causation, synergistic effects of factors, latency periods before health impairment is obvious, and inter- and intra-individual variation (see 4.1). Together, these factors make it difficult to establish risk and set standards for safe exposure. (Bernstein & Lee, 1983; Karvonen, 1986; WHO, 1975.)

In conclusion, this has been a very brief review of some of the methods of individual health assessment and is not intended to be an exhaustive discussion of the subject. Nevertheless, the emphasis is on a comprehensive approach and the inclusion of methods that permit the assessment of all the facets of health status.

#### 5.5.2 Organisational level

Health assessments conducted by health care workers in the workplace (or organisation) commonly involve the determination of health status and health-related practices amongst individual workers, in departments and for the organisation as a whole. However, as stated in 3.5, many of the suggested strategies tend to be based on a limited conceptualisation of health status, focussing upon work hazards with insufficient recognition of positive and subjective aspects of health, as well as the influences of the wider community on workers. Alderson (1983, p. 61) noted the latter problem, warning against the use of morbidity data as a measure of the direct effect of occupation on health. He listed a number of other factors that could influence morbidity in workers:

- "(1) The place of residence of the worker, including the influence of environmental factors and the availability of medical care.
- (2) The multiple processes of selection of an individual 'into' and 'out of' a particular occupation, which are in part related to physical, mental and physiological demands of the job.
- (3) The financial and social consequences of declared illness, including membership of a sick-pay scheme.
- (4) The completeness of notification of incapacity (for example, certain professional workers may not be required to produce certificates unless incapacity is prolonged).
- (5) The general and particular unemployment situation.
- (6) The morale within an industry.
- (7) Other, little understood, subcultural factors."

This study sets out to redress these inadequacies in occupational health status measurement, hence the use of a health model that will be based on a community perspective.

In common with other types of health assessment, the reason for assessing workers' health status will determine the approach and methods to be used. These reasons are linked to the aims of the occupational health programme which usually involve the protection and promotion of employees' health, their appropriate placement with respect to the work to be performed, the protection of the environment, and the provision (or facilitation in obtaining) adequate health care when necessary. (Barick & Jones, 1978; Bernstein & Lee, 1983; Jeyaratnam, 1992; Spradley, 1990.)

#### 5.5.2.1 Departmental evaluation with regard to health influences

Departments and work areas are assessed in relation to the work processes, work procedures and the

environment and their implications for worker or organisational health. Any evaluation of environmental health should involve:

- "- the general characterization of the environment,
- the characterization of those exposed,
- the duration and intensity of exposures to various environmental factors,
- interactions between variables in the environment and those exposed to them, and
- health-related changes in the subjects exposed."

(Karvonen, 1986, p. 3)

The evaluation is based on the nature of the work and the associated hazards. The type of hazards to be found in the work situation have already been described in 4.2. Health hazard evaluation requires:

- "(1) access to personnel, to environmental monitoring, and to medical records:
- (2) interviews with workers:
- (3) access to production or maintenance areas for collection of environmental samples:
- (4) medical examinations:
- (5) the identification and characterization of industrial processes and chemicals : and
- (6) a roster of employees by job category and location of worksite".

(Bernstein & Lee, 1983, p. 13)

The involvement of employees is essential, as they are obviously the best informed on the nature of their work and the effects it has upon them (Howlett & Archer, 1986).

There are a number of types and methods of evaluating the occupational environment. One of these is the "walk-through", during which the assessor observes work processes from beginning to end, especially noting factors that may affect exposure to toxic substances or unsafe work practices. The use of personal protection equipment and the methods used to

control exposure, such as enclosure, segregation of workers and suppression of dusts, are also observed. (Bernstein & Lee, 1983.) Table 5.7 provides a useful list of questions to be answered to assess environmental hazards in the workplace, whilst Table 5.8 indicates the details to be considered when health problems related to the work environment are detected.

1. Can you describe the industrial process (or processes) and physical plant, including the nature and adequacy of industrial hygiene control technology (local and general ventilation, etc.)?
2. Are the problems isolated within the workplace by location or job types?
3. Are there agents present that are known or suspected to cause the alleged acute, subacute, or chronic health problems?
4. What is the physical form of these agents? By what route or routes of entry are workers exposed?
5. Are there industrial processes for which the composition, exposures, and toxicity of products and by-products are inadequately characterized?
6. Have there been recent changes in the raw materials, maintenance, or operation of industrial processes? Be sure to consider lubricants, additives, solvents, contaminants, products, and by-products, as well as the major industrial agents or processes. Obtain material safety data sheets for suspected agents and the results of bulk analyses for the identification of trace contaminants.
7. If the problems have been chronic, why is the request made now?
8. What is known about the compliance history and environmental monitoring results of the workplace environment with respect to known agents and established standards?
9. Are labor-management or workers' compensation disputes involved in the request?

**Table 5.7: Questions for assessing environmental hazards (Bernstein & Lee, 1983, p. 15)**

Sampling is another method of environmental monitoring, and is essentially the function of the occupational hygienist. Other surveys of the environment may be made when a new process is introduced in order to prevent health impairment, to detect the cause and effect of exposure, or to assess compliance with regulations. (Brown, 1981.)



*Establishing a case definition and confirming cases:*

1. Is there a sentinel case or a cluster of reported illnesses?
2. Is there a syndrome-like consistency to the reported symptoms and signs?
3. Have examining physicians confirmed the cases?
4. Are reproductive or "take-home" familial effects recognized or plausible?
5. Once cases are confirmed, can the reported clinical syndrome or case definition be explained by a biologically plausible hypothesis (differential diagnosis)—e.g., exposure to chemical, physical, or infectious agents?

*Case-finding and descriptive epidemiology:*

1. Who and how many are ill? (*numerator*)
2. Who and how many are exposed or at risk? (*denominator*)
3. Can you estimate the prevalence or attack ratio? (*numerator/denominator*)
4. Is there evidence of urgency because of the severity, extent, or progression of symptoms?
5. Is there evidence of a unique or high-risk group of affected individuals (response by job types, job locations, or tenure at work)?
6. Is there a temporal or spacial pattern to the onset of the problems among individuals or within job categories? Do symptoms vary with process changes, shift changes, weekends, shutdown, or transfer from one job to another?
7. What are the predictive value, sensitivity, and specificity of screening tests available for case identification and case confirmation?
8. Can you characterize the affected or exposed populations by a line listing of name, age, zip code, sex, ethnicity, job classification, date of hiring, time in current job, and date and circumstances of onset of symptoms, if any? When available, list previous occupations, smoking history, and other known risk factors.

9. Is there a relevant preemployment medical data base? Are routine periodic follow-up examinations performed? Are the compensation, medical, and life insurance records accessible and organized to include information on the employees' occupational and medical histories, as well as specific diagnoses?

*Analytical epidemiology:*

1. Is there an appropriate nearby occupational group available for comparison studies?
2. Does the company, Centers for Disease Control or NIOSH, state health department, federal or state regulatory agency, or a nearby medical center have epidemiological data on relevant exposures, morbidity, and mortality patterns in the worksite and the local community (i.e., what are the expected values)?
3. If subacute or chronic diseases are suspected, can former employees be located and their vital status be ascertained? Can the cause of death be ascertained for deceased former employees? Are there historical environmental monitoring records available for former and present employee exposures by job category?
4. Considering the "expected" distribution and occurrence of similar disease entities that may be attributable to infectious, immunological, congenital, vascular, metabolic, neoplastic, degenerative, or psychosocial processes, can you account for any excess of disease by a plausible association with prevalent or historical occupational exposures?
5. Will the size of the population at risk and an available comparison group permit reliable detection of a true excess of disease?

Table 5.8: Details to be considered when work environment related health problems are identified (Bernstein & Lee, 1983, p. 14)

#### 5.5.2.2 Assessment at the organisational level

The assessment of the organisation (workplace) as the macrosystem can also be approached in a number of different ways. Pender (1987) notes that it can be analysed in terms of its structure, process, functions

and resources, much like the community assessment. These in turn will be assessed on the basis of the status of the individuals in the organisation and the functioning of the departments or units. In this way, a comprehensive picture of the parts and the whole will be derived. The policies and management style may have a significant effect on worker health (see 4.5.4.1), as will the remuneration, benefits and value placed on them by management. Any evaluation of an organisation must include these aspects.

Accordingly, Cox (1990) proposes an organisational health audit, based on the ability of the organisation to offer different environments to employees. The main ones being task, problem-solving, personal development and professional development environments. The quality of these will serve as "powerful predictors of organisationally relevant outcomes, such as staff turnover and absence, impact of absence, and community perceptions of the organisation" (p. 15). For this reason, Cox argues that the health of an organisation cannot be determined simply on the basis of individual employee health profiles.

In a more limited approach to assessing health, Alderson (1983) suggested a series of items that could be included in a data collection system for assessing health and working conditions in an organisation (Table 5.9). The results would then be combined to make an assessment on a collective level.

An example of a safety checklist, devised by the National Occupational Safety Association (NOSA) to assess occupational safety in an organisation and commonly used in South Africa, is shown in Figure 5.12. Figure 5.13 gives the major components of a university

accident prevention programme, identifying some of the hazards to be found in such a setting. This is not an exhaustive list, however, as the types of departments on a campus may vary considerably.

1 EMPLOYEE HISTORY	4 BIOMEDICAL DATA
1.1 <i>Personal data</i>	<i>Haematology</i>
Name	haematocrit
Personnel No.	haemoglobin
National registration No.	platelets
Address	R.B.C. count
Sex	W.B.C. count
Date of birth	<i>Urinalysis</i>
Marital status	albumin
Ethnic origin	glucose
1.2 <i>Work history</i>	haemoglobin
Company/Location/Department/Workplace	ketones
Job title and position for every job	pH
Date starting and ending each job	sediment
Day/Shift worker	<i>Biochemistry</i>
1.3 <i>Reason for leaving</i>	cholesterol
2 MEDICAL EVENTS	creatinine
2.1 <i>Morbidity</i>	gamma G.T.
Record of all absences for illness	glucose
Confirmed diagnosis for all spells over 21 consecutive days	S.G.O.T.
Review of diagnoses for cumulative absence over 21 days in a year	S.G.P.T.
2.2 <i>Medical history</i>	triglycerides
Smoking	uric acid
Use of medicines	<i>Medical review</i>
Revised every 2 years	history
2.3 <i>Mortality</i>	examination
Date of death	B.P.
Causes of death (up to 4 on certificate)	height
Method of diagnosis	weight
ENVIRONMENTAL EXPOSURE	investigations
3.1 <i>Potential exposure</i>	audiogram
Chemicals used listed by workplace	E.C.G.
3.2 <i>Area monitoring</i>	F.E.V <sub>1</sub>
Measurement in various work areas to give derived exposure level	F.M.F. 25:75
3.3 <i>Individual exposure</i>	F.V.L.
Actual environmental measurements on sample of workers to provide group personal exposure	X-ray chest

Table 5.9: Items for assessing health and working conditions in an organisation (Alderson, 1983, p. 305)

## SAFETY EFFORT SURVEY/STAR GRADING

CONFIDENTIAL SURVEY/STAR GRADING OF MESSRS. ....

**NOTE:** Items marked "X" require management's attention and should be read in conjunction with the accompanying report. Please refer to the booklet "Management by Objectives" for advice on effective management practice in accident prevention.

The Action column could be used to indicate who should take steps to rectify e.g. Engineer, Electrician, Production Manager or to determine priorities.

	Max.	Actual	Action		Max.	Actual	Action
<b>1.00 PREMISES AND HOUSEKEEPING</b>				<b>4.00 ACCIDENT RECORDING AND INVESTIGATION</b>			
1.11 Buildings and floors: clean and in good state of repair	40			4.11 Injury/disease register and dressing book	20		
1.12 Good lighting: natural and artificial	20			4.12 Injury/disease internal reporting	20		
1.13 Ventilation: natural and artificial	20			4.13 Injury/disease statistics and WC Act costs available	20		
1.14 Occupational hygiene facilities	20			4.14 Incident reporting	20		
1.15 Pollution: air, ground and water	20			4.15 Incident statistics kept	20		
1.20 Housekeeping and layout				4.20 Investigation of causes of injuries and disease: remedial measures taken	20		
1.21 Aisles and storage demarcated	30			4.21 Investigation of incidents: remedial measures taken	20		
1.22 Good stacking and storage practices	40			4.22 Insurance: premiums, claims; rebates	10		
1.23 Factory and yard: tidy	40			4.23 Incident recall	10		
1.24 Scrap and refuse bins: removal system	20				160		
1.25 Colour coding: plant and pipe-lines	30						
<b>SECTION RATING</b>	<b>280</b>			<b>SECTION RATING</b>			
<b>2.00 ELECTRICAL, MECHANICAL AND PERSONAL SAFEGUARDING</b>				<b>5.00 SAFETY ORGANISATION</b>			
2.11 Machine guarding	100			5.10 One person made responsible for safety co-ordination in writing	30		
2.12 Lock-out system and usage	30			5.11 One person made responsible for health and hygiene co-ordination in writing	20		
2.13 Labelling of shut-off valves, switches, etc.	30			5.12 Appointment in terms of Factory Reg. C.7.2(a) and (b) or Mines Reg. 2.9.2	30		
2.14 Ladders (registers), stairs, walkways, scaffolding	40			5.13 Safety committees	50		
2.15 Lifting gear and records	40			5.14 Other communication systems	20		
2.16 Compressed gases: pressure vessels and records	30			5.15 First-aiders and facilities	20		
2.17 Chemicals: purchasing, handling and storing radio active material	20			5.16 First-aid training	20		
2.18 Motorised transport: checklist, licences crane and driver	30			5.20 Safety propaganda			
2.21 Portable electrical equipment: register	40			5.21 Posters, bulletins, newsletters, safety films and internal competitions, etc.	50		
2.22 Earth leakage relays: use and check	20			5.22 Notice board indicating injury experience and NOSA Star Grading	20		
2.23 General electrical installations and flameproof	30			5.23 Suggestion scheme	20		
2.30 Hand tools: e.g. hammers and chisels	30			5.24 Safety Reference Library	10		
2.31 Ergonomics	20			5.25 Annual Reports - Loss Control achievements	10		
2.40 Protective equipment (issued: use)				5.30 Induction and ongoing job instruction	40		
2.41 Head protectors	20			5.31 NOSA safety training courses	50		
2.42 Eye and face protection	20			5.32 Medical examinations	20		
2.43 Foot protectors	20			5.33 Selection and placement	20		
2.44 Protective clothing	20			5.40 Plant inspection - system of reporting to management on safety conditions	40		
2.45 Respiratory equipment	20			5.41 Self audits	50		
2.46 Hearing conservation	20			5.42 Safety specifications: Purchasing and Engineering Control new plant and contractors	20		
2.47 Safety harness: issue and maintenance	20			5.50 Written safe work practices and procedures: issued and used	40		
2.48 Hand protection	20			5.51 Planned job observation	20		
2.49 Issue, maintenance and control record books	20			5.52 Work permits	10		
2.50 Notices and signs: Electrical, mechanical, protective equipment, traffic signs, symbolic safety signs	30			5.60 Off the job safety	10		
<b>SECTION RATING</b>	<b>670</b>			5.61 Safety/Loss Control Policy	30		
<b>3.00 FIRE PROTECTION AND PREVENTION</b>				<b>SECTION RATING</b>			
3.01 Correct types of extinguishing equipment	30			<b>650</b>			
3.02 Floors demarcated & clear, extinguishing equipment accessible	20			<b>OVERALL RATING</b>	<b>2000</b>		
3.03 Locations marked	20			<b>GRADING %</b>			
3.04 Maintenance of equipment	30						
3.05 Storage flammable and explosive material	30						
3.06 Alarm system	20						
3.07 Fire fighting drill and instruction	40						
3.08 Security and inter-company co-ordination	20						
3.09 Emergency planning	20						
3.10 Fire co-ordinator	10						
<b>SECTION RATING</b>	<b>240</b>						

EFFORT RATING VALUES			
NO. OF STARS	RATING	DIFR	
***** Excellent	91-100	5	
**** Very good	75-90	10	
*** Good	61-74	15	
** Average	51-60	20	
* Fair	40-50	25	

Figure 5.12: NOSA safety checklist

Area of Concern	Where It Can Be Found	Typical Standards	Typical Hazards
Fire Prevention	Every building and storage facility on campus	OSHA 1910 Subpart H&L, NFPA "Life Safety Code," State Fire Marshal	Fires, burns, smoke inhalation, death
Flammable and Combustible	Storage areas, research laboratories, physical plant	OSHA 1910 Subpart H, NFPA "Life Safety Code," State Fire Marshal	Fires, Explosion
Means of Egress	All inhabited buildings and areas	OSHA 1910.36, 38 NFPA "Life Safety Code," State Fire Marshal, Local Building Codes	Fires, people trapped in emergency situations
Machinery and Machine Guarding	Food preparation, machine shops, physical plants	OSHA 1910 Subpart O	Cuts, abrasions lacerations, and contusions
Storage and Material Handling	All storage areas and all areas receiving large deliveries and shipments	NFPA-General Indoor Storage, OSHA 1910 Subpart N, ANSI B56.1 "Standards for Forklifts"	Falls, forklift accidents, struck by injuries
Welding, Cutting and Brazing	Physical Plant, Workshops	OSHA 1910 Subpart Q, State Fire Marshal	Fires, burns, heat extremes, eye injuries
Airborne Contaminants	Workshops, physical plants, research	OSHA 1910 (1000-1014)	Toxic inhalation, respiratory, eye and skin respiration
Electrical	All buildings, structures, and surrounding areas	National Electric Code, Local Building Codes	Fire, electrical shock, electrocution
Chemical Hazards	Research Laboratory	OSHA 1910 Subpart Z	Toxic exposure, carcinogen, skin exposure, eye, respiratory irritation

Figure 5.13: Components of a university accident scheme (Hurst and Kalil, 1986, p. 40)

An increasingly important aspect of work evaluation concerns ergonomics, particularly with growing computerisation and automation of processes.



The health effects of the man-machine interface must be included in occupational health assessments. (Armstrong & Langolf, 1983; Brown, 1981; Corlett, 1981.) An example of one such is found in Figure 5.16.

In a report on the evaluation and control of the work environment, the Nursing Committee of the Permanent Commission and International Association on Occupational Health (1983, p. 5) described the data to be collected as part of an environmental assessment. This will relate to:

- "\* the establishment, including
  - the type of organisation
  - the parent organisation
  - the product or service
  - the processes (if possible by flow-chart)
  - raw materials
  - by-products
  - geographical locations of all sections
- \* health and safety policies
- \* the workforce, including
  - total workforce population
  - male/female ratio
  - age distribution
  - geographical location
  - nationalities shifts
- \* each section or department
  - number of workers
  - product or service
  - known hazards
- \* injury and illness experience, and incidents which may not have caused actual harm to a person
- \* legislative obligations to control the work environment
- \* previous environmental evaluations including
  - scientific assessments
  - inspections in compliance with legislation
  - occupational health service evaluations"

(See Figures 5.14 to 5.16.)



OCCUPATIONAL HEALTH SERVICE Comprehensive Environmental Survey			
<u>DATE:</u>		<u>TIME:</u>	
<u>COMPANY:</u>		<u>SECTION:</u>	
<u>SUPERVISOR:</u>		<u>PHONE:</u>	
<u>PRODUCT:</u>			
<u>MATERIALS:</u>			
<u>PROCESS:</u>			
<u>BY-PRODUCTS:</u>			
<u>WORKFORCE</u>	<u>TOTAL:</u>	<u>MALE:</u>	<u>FEMALE:</u>
<u>INFORMATION RELATING TO DEPARTMENT ADMINISTRATION</u>			
<u>MOST COMMON INJURY/ILLNESS</u>			
<u>COMMENT ON TURNOVER AND ABSENTEEISM TRENDS.</u>			
<u>SELECTED DUTIES AVAILABLE</u>			
<u>JOB ROTATION</u>			
<u>SAFETY OFFICER OR REPRESENTATIVE</u>			

SURVEY OBSERVATIONS				
FACTORS	SATIS-FACTORY	UNSATIS-FACTORY	COMMENT	FURTHER ACTION
<u>HOUSEKEEPING &amp; MAINTENANCE</u>				
Tidiness/Storage				
Cleanliness				
Painting				
Drainage				
Waste Disposal				
<u>EMPLOYEE FACILITIES</u>				
Toilets				
Washing				
Lockers				
Eating				
Drinking Water				
<u>FIRST AID</u>				
Boxes				
Room				
Stretcher				
Personnel				
<u>EMERGENCY</u>				
Fire Equipment				
Fire Exits				
Plan				
<u>PSYCHO-SOCIAL</u>				
Atmosphere				
Personal Relations				
Mood of Workers				
Stress/Pressures				

Table 5.14: Comprehensive environmental survey (Nursing Committee of the Permanent Commission and International Association on Occupational Health, 1983, pp. 19 - 24)

FACTORS	SATIS-FACTORY	UNSATIS-FACTORY	COMMENT	FURTHER ACTION
<u>LIGHTING</u>				
Intensity				
Reflection				
Glare				
Colour				
<u>THERMAL ENVIRONMENT</u>				
Temperature				
Humidity				
Rad/Reflect. Heat				
Air Circulation				
Exposure Time				
Clothing				
<u>VENTILATION</u>				
Natural Airflow				
Assisted Ventilation				
Local Exhaust Ventilation				
Air Conditioning				
<u>FLOORS</u>				
Composition				
Maintenance				
Work at Heights				
Slipperiness				
Guard Rails				
Stairs/Catwalk				
<u>NOISE</u>				
Level				
Characteristics				
Noise Dose				
Frequency				
Vibration				

FACTORS	SATIS-FACTORY	UNSATIS-FACTORY	COMMENT	FURTHER ACTION
<u>CHEMICALS</u>				
Dust				
Liquid/Solvents				
Alkaline/Acid				
Vapour				
Heavy Metals				
Colourants				
<u>BIOLOGICAL</u>				
Bacterial Fungal				
Algal, Viral				
Parasitic				
<u>RADIATION</u>				
Ionising				
Non Ionising				
Lasers				
Microwave				
Infra Red/ Ultra Violet				
<u>MATERIALS HANDLING</u>				
Aids				
Dimensions/wt.				
Duration				
Space				
Posture/ Repetition				
<u>WORKPLACE LAYOUT</u>				
Bench/sest ht.				
Surface				
Flow				

Table 5.14: Continued



## Checklist for Investigating Handling Tasks

### General

1. What is purpose of handling? Consider infrequent and common tasks.
2. Are there restrictions, of cost and time, to possible improvements?
3. Will improvements conflict with handling within a larger system?

### Handling Task

1. What accidents and injuries have arisen or may arise from any action?
2. List size, shape, weight and packaging of materials to be handled.
3. List actions required. Are they performed sitting, standing, walking?
4. Note rate, accuracy, regularity, and rhythm of handling required.
5. Are simultaneous actions needed? Do major static components exist?
6. Do any actions require more than one man for safe handling?

### Operators

1. Do the physical dimensions of the operators need consideration?
2. Have the actions been planned for average capabilities?
3. Are any actions incompatible with human limitations of strength, speed, accuracy, reach?
4. If the load has been designed for males, do females have to cope with it?
5. Are the capabilities of the operator being overloaded or not fully utilised?

### Equipment, Workspace and Environment

1. Are passages, seats, workspaces adequate for dimensions of operators?
2. Is protective clothing available, and availed of, where necessary?
3. Are suitable mechanical aids provided and used?
4. Is allowance made for maintenance and housekeeping? Are they done?
5. Are workplaces adequately lit?
6. Does the thermal environment effect well-being or performance?
7. Does noise hamper communication? Is vibration a problem?

### Selection and Training

1. Are operators of suitable intellectual and physical capacity selected?
2. What training is required, and given?
3. Have written instructions been supplied and understood?
4. Do operators understand the purpose of handling, and of methods used?
5. Is testing done, or necessary?

### Supervision and Work Organisation

1. Is there adequate feedback to operators on results of performance?
2. Is appreciation of good work shown?
3. Have the opinion of foremen and experienced operators been sought?
4. Has allowance been made for relief and rest of operators, or rotation of duties, if the work cycle does not allow adequate impromptu pauses and variation of activities?
5. Is there dynamic or static overload on any one muscle group, and if so can it be engineered out, or reduced by variation and alteration?
6. Are all actions necessary, or can some actions be eliminated or modified so as to be made more effective, or combined or co-ordinated with further stages?
7. Can all or some actions be better done by machine?
8. If isolation, boredom, fatigue and environmental or emotional stress are likely, would a machine be able to replace?
9. Are handling injuries adequately investigated? Is correction applied?
10. Are planning and supervision of handling activities adequate?

Table 5.15: Checklist for investigating handling tasks  
(Nursing Committee of the Permanent Commission and International Association on Occupational Health, 1983, p. 25)

## Ergonomic Inspection Check List

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Company: ..... Department: .....

Job: ..... Worker: ☐ male ☐ female

Check list completed: ...../.....19..... by .....

Check list dealt with in the safety committee: ...../.....19.... by .....

### 1. MONOTONOUS & PACED WORK yes no realised

Is the work varied enough? ☐ ☐ Reduce the monotony of the work according to instructions: ..... ☐

Can the worker decide his own pace? ☐ ☐ Reduce the effect of pacing according to instructions: ..... ☐

### 2. PHYSICAL WORK

Is manual lifting of heavy loads avoided (loads weighing ..... kg)? ☐ ☐ Use lifting devices: ..... ☐

Is the lifting height safe (70-80cm)? ☐ ☐ ..... ☐

Does lifting work satisfy the demands for safe lifting? ☐ ☐ ..... ☐

Does the worker feel his work position is good? ☐ ☐ ..... ☐

Is there a lack of supports for the body extremities, trunk or work objects? ☐ ☐ Provide supports etc: ..... ☐

### 3. WORK MOVEMENTS

Has the worker complained of pain which appeared in the shoulder or wrist during or after work? ☐ ☐ Change the work according to instructions. Pains after the work was changed ☐ Have disappeared ☐ continue — consult a specialist

Is the angle between the body and the upper arm continuously less than 30°? ☐ ☐ Change the work in such a way that the angle is less than 30° ..... ☐

Are repeated movements of the wrist done within the prescribed angle? ☐ ☐ Change the work in such a way that the angle of the wrist is safe. .... ☐

### 4. STANDING

Is unnecessary standing avoided? ☐ ☐ Change the work position to a sitting one ☐

Can the work be done without the worker being continuously in a bent position? ☐ ☐ Raise the work level ..... cm ☐

Can the work be done without the worker being continuously in a twisted position? ☐ ☐ ..... ☐

Can the work be done without raising and tightening the shoulder muscles? ☐ ☐ Lower the work level ..... cm /raise the standing level ..... cm /move the work ..... cm closer ☐

Can the work be done standing on both legs? ☐ ☐ ..... ☐

Can one sit during breaks? ☐ ☐ Provide a seat ☐

Is there enough space in the work area? ☐ ☐ ..... ☐

Is the surface of the floor good for standing? ☐ ☐ ..... ☐

### 5. SITTING

Can work be done without the worker being continuously in a bent position? ☐ ☐ Raise the work level ..... cm /lower the seat ..... cm ☐

Can the work be done without the worker being continuously in a twisted position? ☐ ☐ ..... ☐

Can the work be done without raising and tightening the shoulder muscles? ☐ ☐ Lower the work level ..... cm /raise the seat ..... cm /move the work ..... cm closer ☐

Are the heels firmly on the floor? ☐ ☐ Lower the seat ..... cm /provide foot supports ..... cm high ☐

Can one vary the position of the feet? ☐ ☐ ..... ☐

Can one move easily in the work area? ☐ ☐ ..... ☐

Does the seat satisfy demands for a good seat? ☐ ☐ ..... ☐

Can the worker walk as well as sit during work? ☐ ☐ ..... ☐

### 6. ENVIRONMENTAL FACTORS

Can one talk in the work area without shouting? ☐ ☐ Reduce noise: ..... ☐

Is the lighting even (no unevenly lighted areas)? ☐ ☐ Make the lighting more even: ..... ☐

Is there enough light? ☐ ☐ ..... ☐

Are hot surfaces covered or far enough away from the workers? ☐ ☐ Cover surfaces or move the worker: .. ☐

Is the temperature in the work area appropriate for the kind of work being done? ☐ ☐ ..... ☐

Is the work area without draughts? ☐ ☐ Cover cold windows and walls: ..... ☐



The approach suggested by the committee is comprehensive as far as hazard assessment is concerned, but is inadequate for the total assessment as it does not take sufficient account of the psychosocial aspects of work nor the influences of the wider community.

Studies on sickness absence, or "absence attributed to incapacity" (Taylor & Pocock, 1981, p. 339) also evaluate the organisation as a macrosystem. These assessments are important as they provide insight into the functioning and health of the organisation and its members. Taylor and Pocock outlined the factors known to influence sickness absence that would be taken into account in such studies (Table 5.10). Once again, the assessments include individual, organisational and community influences.

Table 5.10: Factors that influence sickness absence (Taylor & Pocock, 1981, p. 349)

National/ regional	Organisation/ department	Personal factors
Geography	Type and size	Sex, age and status
Race	Management attitude	Occupation and length of service
Season	Supervisory quality	Working hours and wage rates
Health service	Personnel policy	Job satisfaction
Insurance benefits	Sick pay	Journey to work
Pension age	Working conditions	Medical conditions
Epidemics	Medical service	Family responsibility
State of economy	Labour turnover	Personality



Barick and Jones (1987, p. 674) discuss stress surveys used to assess firstly, the organisational stressors that cause stressful work environments, and secondly, the organisational and employee coping skills that can act as "stress buffers" or mediators. They describe the assessments made by the St. Paul Insurance companies, that involve a comprehensive organisational survey. In the first phase, they conduct the Human Factors Inventory that examines employee attitudes in seven risk areas. These are job stress, job dissatisfaction, organisational stress, personal stress, accident risks, health and life risks and technostress. The second phase involves the assessment of the company's health and stress management services by means of the Human Factors Audit, in which the programmes, their effectiveness and utilisation are examined. Thus management can make sound decisions to prevent occupational stress in their organisation. Many of these aspects will be incorporated in the suggested strategy for the measurement of aggregate health.

Serafini (1976) offers a more comprehensive assessment guide, that combines the three levels of assessment (Figure 5.17). This is a valuable guide because it takes into account the wider community in which the organisation is situated and recognises the importance of on- and off-the-job influences. In the researcher's opinion, it is one of the most useful occupational health assessments to be developed by a nurse.

The need for the containment of health care costs in the workplace was discussed in 4.4. To this end, Barick and Jones (1978, p. 663) outline an

### Assessment Guide for Nursing In Industry: A Model

- |   |  |
|---|--|
| <p>1. Community in which industry is located</p> <p>a. Description of the community</p> <ul style="list-style-type: none"> <li>(1) Size in area and population</li> <li>(2) Climate, altitude, rainfall</li> <li>(3) Pollution (noise, radiation, etc.)</li> <li>(4) Housing</li> <li>(5) Transportation</li> <li>(6) Schools</li> <li>(7) Sanitation</li> <li>(8) Protection: fire, police, etc.</li> <li>(9) Trends</li> </ul> <p>b. Population</p> <ul style="list-style-type: none"> <li>(1) Age distribution</li> <li>(2) Sex distribution</li> <li>(3) Ethnic and religious composition</li> <li>(4) Socioeconomic characteristics</li> </ul> <p>c. Health information</p> <ul style="list-style-type: none"> <li>(1) Vital statistics</li> <li>(2) Disease incidence and prevalence</li> <li>(3) Health facilities available</li> <li>(4) Community resources</li> </ul> <p>2. The company</p> <p>a. Historical development</p> <p>b. Organizational chart</p> <p>c. Policies</p> <ul style="list-style-type: none"> <li>(1) Length of the work week</li> <li>(2) Length of work time</li> <li>(3) Sick leave</li> <li>(4) Safety and fire provisions</li> </ul> | <p>1. Just as industry affects the community, so the community affects industry.</p> <p>a. Use three or four key descriptive words.</p> <ul style="list-style-type: none"> <li>(1) How far do the employees travel to work and are the workers neighbors?</li> <li>(2) Are there times or seasons that are more hazardous than others?</li> <li>(3) Can the worker's dermatitis or hearing loss be attributed to the community or is it work related?</li> <li>(4) Is there adequate, safe housing in the area? Must the worker spend too great a percentage of his or her salary on housing?</li> <li>(5) Is there safe, adequate transportation to work as well as to a hospital or school?</li> <li>(6) Do children have to be bused to school or attend overcrowded classes?</li> <li>(7) Are roaches and rats common to the area?</li> <li>(8) Are the workers and the industry protected?</li> <li>(9) Is the area becoming more urban? Residential? Rundown? Deserted?</li> </ul> <p>b. How alike or different is the population of the industry from that of the community?</p> <ul style="list-style-type: none"> <li>(1) Are the families of child-rearing age or of retirement age?</li> <li>(2) Are there more men or more women?</li> <li>(3) Are there certain customs or languages that are predominant in the community?</li> <li>(4) What is the level of education of the community? What is the mean community income?</li> </ul> <p>c. Is it an ill or well community?</p> <ul style="list-style-type: none"> <li>(1) What is the infant mortality rate, birth rate, average life expectancy? Usually the local health department has this information.</li> <li>(2) What are the leading causes of morbidity and mortality?</li> <li>(3) What physical facilities and professional services are available?</li> <li>(4) Are there day-care centers, drug rehabilitation facilities, Alcoholics Anonymous groups, etc.?</li> </ul> <p>2. The official name and address of the company.</p> <p>a. Get a perspective on how, why, and by whom the company was founded and compare it with the present situation.</p> <p>b. What is the formal order of the system and to whom will the nurse be responsible?</p> <p>c. If there is a policy manual, try to obtain a copy. Are the workers aware of the manual?</p> <ul style="list-style-type: none"> <li>(1) How many days a week does the industry operate?</li> <li>(2) Are there several shifts? Breaks? Is there paid vacation?</li> <li>(3) Is there a clear policy, and do the workers know it?</li> <li>(4) Is management aware of situations or substances in the plant which represent danger? Are there organized fire drills? The <i>Federal Register</i> is the source of information for federal standards and serves as a helpful guide.</li> </ul> |
|---|--|

Figure 5.17: Serafini's assessment guide (Clemen et al, 1981, pp. 274 - 281)

<p>d. Support services (benefits)</p> <ul style="list-style-type: none"> <li>(1) Insurance programs</li> <li>(2) Retirement program</li> <li>(3) Educational support</li> <li>(4) Safety committee</li> <li>(5) Recreation committee</li> </ul> <p>e. Relations between worker and management</p> <p>f. Projection for the future</p>	<p>d. What is the attitude of management concerning worker benefits?</p> <ul style="list-style-type: none"> <li>(1) <i>Is there a system for health insurance and life insurance, and is it compulsory? Does the company pay all or part? Who fills out the necessary forms?</i></li> <li>(2) <i>Are the benefits realistic?</i></li> <li>(3) <i>Can the worker further his or her education? Will the company help financially?</i></li> <li>(4) <i>The programmed Red Cross First Aid course is excellent. For information consult your Red Cross. If there is no committee, do certain people routinely handle emergencies?</i></li> <li>(5) <i>Do the workers have any communication with or interest in each other outside the work setting?</i></li> </ul> <p>e. This is difficult information to get, but it is important to know how each perceives the other.</p> <p>f. If the company is growing, workers may see themselves as having a secure future; if not, they may be worried about their job security. How will plant expansion affect the need for nursing services?</p>
<p>3. The plant</p> <p>a. General physical setting</p> <ul style="list-style-type: none"> <li>(1) The construction</li> <li>(2) Parking facilities and public transportation stops</li> <li>(3) Entrances and exits</li> <li>(4) Physical environment</li> <li>(5) Communication facilities</li> <li>(6) Housekeeping</li> <li>(7) Interior decoration</li> </ul> <p>b. The work areas</p> <ul style="list-style-type: none"> <li>(1) Space</li> <li>(2) Heights: workplace and supply areas</li> <li>(3) Stimulation</li> <li>(4) Safety signs and markings</li> <li>(5) Standing and sitting facilities</li> <li>(6) Safety equipment</li> </ul> <p>c. Nonwork areas</p> <ul style="list-style-type: none"> <li>(1) Lockers</li> <li>(2) Hand-washing facilities</li> <li>(3) Rest rooms</li> </ul>	<p>3. Draw a small map to scale, labeling the areas. When an accident occurs, place a pin in the exact location on your map. Different-color pinheads can be used for keeping statistics.</p> <p>a. What is the gross appearance?</p> <ul style="list-style-type: none"> <li>(1) <i>What is the size and general condition of buildings and grounds?</i></li> <li>(2) <i>How far does the worker have to walk to get inside?</i></li> <li>(3) <i>How many people must use them? How accessible are they?</i></li> <li>(4) <i>Comment on heating, air conditioning, lighting glare, drafts, etc.</i></li> <li>(5) <i>Are there bulletin boards, newsletters?</i></li> <li>(6) <i>Is the physical setting maintained adequately?</i></li> <li>(7) <i>Are the surroundings conducive to work? Are they pleasing?</i></li> </ul> <p>b. Get permission to examine them. Use <i>The Federal Register</i> as a guide.</p> <ul style="list-style-type: none"> <li>(1) <i>Are workers isolated or crowded?</i></li> <li>(2) <i>Falls and falling objects are dangerous and costly to industry.</i></li> <li>(3) <i>Is the worker too bored to pay attention?</i></li> <li>(4) <i>Is danger well marked?</i></li> <li>(5) <i>Are chairs safe and comfortable? Are there platforms to stand on, especially for wet processes?</i></li> <li>(6) <i>Do the workers make use of hard hats, safety glasses, face masks, radiation badges, etc.? Do they know the safety devices the OSHA regulations require?</i></li> </ul> <p>c. Where are they located? Is there easy access?</p> <ul style="list-style-type: none"> <li>(1) <i>If the work is dirty, workers should be able to change clothes. Are they taking toxic substances home?</i></li> <li>(2) <i>If facilities and supplies are available, do workers know how and when to wash their hands?</i></li> <li>(3) <i>How accessible are they and what condition are they in?</i></li> </ul>

Figure 5.17: Continued

(4) Drinking water	(4) Can a worker leave the job long enough to get a drink of water when he or she wants to?
(5) Recreation and rest facilities	(5) Can a worker who is not feeling well lie down? Do workers feel free to use the facilities?
(6) Telephones	(6) Can a worker receive or make a call? Does a working mother have to stay home because she can't be reached at work?
(7) Ashtrays	(7) Are people allowed to smoke in designated areas? Is it safe?
4. The working population	4. Include worker and management, but separate data for comparison.
a. General characteristics	a. Be as accurate as possible, but estimate when necessary.
(1) Total number of employees	(1) Usually, if an industry has 500 or more employees, full-time nursing services are necessary.
(2) General appearances	(2) Heights, weights, cleanliness, etc.
(3) Age and sex distribution	(3) Certain screening programs are specific for young adults whereas others are more for the elderly. Some programs are more for women; others are more for men. Is there any difference between day and evening shift? Are the problems of the minority sex unattended?
(4) Race distribution	(4) Does one race predominate? How does this compare with the general community?
(5) Socioeconomic distribution	(5) Great differences in worker salaries can sometimes cause problems.
(6) Religious distribution	(6) Does one religion predominate? Are religious holidays observed?
(7) Ethnic distribution	(7) Is there a language barrier?
(8) Marital status	(8) Widowed, single, divorced people often have different needs.
(9) Educational backgrounds	(9) Can all teaching be done at approximately the same level?
(10) Life-styles practiced	(10) Are certain life-styles frowned upon?
b. Type of employment offered	b. What percentage of the work force is blue-collar and what percentage is white-collar?
(1) Background necessary	(1) What educational level is required? Skilled vs. unskilled?
(2) Work demands on physical condition	(2) Strength needed: sedentary vs. active.
(3) Work status	(3) Part-time vs. full-time; overtime?
c. Absenteeism	c. Is there a record kept? By whom? Why?
(1) Causes	(1) What are the five most common reasons for absence?
(2) Length	(2) Absenteeism is costly to the employer. There is some difference between one 10-day absence and ten 1-day absences by the same person.
d. Physically handicapped	d. Does the company have a policy about hiring the handicapped?
(1) Number employed	(1) Where do they work? What do they do?
(2) Extent of handicaps	(2) Are they specially trained? Are they in a special program? Do they use prosthetic devices?
e. Personnel on medication	e. Know what medication and where the employee works.
f. Personnel with chronic illness	f. At what stage of illness is the employee? Where does the employee work? Will he or she be able to continue at this job?
5. The industrial process	5. What does the company produce and how?

Figure 5.17: Continued

- a. Equipment used
    - (1) General description of placement
    - (2) Type of equipment
  - b. Nature of the operation
    - (1) *Raw materials used*
    - (2) Nature of the final product
    - (3) Description of the jobs
    - (4) Waste products produced
  - c. *Exposure to toxic substances*
  - d. Faculties required throughout the industrial process
6. The health program
- a. Existing policies
    - (1) Objectives of the program
    - (2) *Preemployment physicals*
    - (3) First-aid facilities
    - (4) *Standing orders*
    - (5) *Job descriptions for health personnel*
  - b. Existing facilities and resources
    - (1) Trained personnel
    - (2) Space
    - (3) *Supplies*
    - (4) *Records and reports*
  - c. *Services rendered in the past year*
    - (1) Care needed
    - (2) Screening done
    - (3) Referrals made
    - (4) Counseling done
    - (5) Health education
  - d. *Accidents in the past year*
  - e. *Reasons employees sought health care*
- a. Portable vs. fixed; light vs. heavy.
    - (1) Mark each piece of large equipment on the scale map.
    - (2) Fans, blowers, fast moving, wet or dry.
  - b. Get a brief description of each stage of the process so that you can compare the needs and abilities of the worker with the needs of the job.
    - (1) *What are they and how dangerous are they? Are they properly stored? Check The Federal Register for guidelines on storage.*
    - (2) Can the workers take pride in the final product or do they make parts?
    - (3) Who does what? Where? Label the map.
    - (4) What is the system for waste disposal? Are the pollution control devices in place and functioning?
  - c. *Describe the toxins to which the worker is exposed and the extent of exposure.* Include physical and emotional hazards. Remember that chronic effects of industrial exposure are subtle: a person often gets used to having mild symptoms and won't report them. *The Federal Register* contains specifications for exposure to toxins and some states issue state standards.
  - d. The need for speed, hearing, color vision, etc., can help determine the types of screening programs necessary.
6. Outline what is actually in existence as well as what employees perceive to be in existence.
- a. Are there informal, unwritten policies?
    - (1) Are they clear?
    - (2) Are they required? Are they paid for by the company? Is the information used to deselect?
    - (3) What is available? What is not available?
    - (4) Is there a company physician who is responsible for first aid or emergency policy? If so, work closely with him or her in planning nursing services.
    - (5) If there are no guidelines to be followed, write some.
  - b. Sometimes an industry that denies having a health program has more of a system than it realizes.
    - (1) *Who responds in an emergency?*
    - (2) Where is the sick worker taken? Where is the emergency equipment kept?
    - (3) *Make a list and describe the condition of each item.*
    - (4) What exists? The Occupational Safety and Health Act requires that employers keep three types of records: a log of occupational injuries and illnesses, a supplemental record of certain illnesses or injuries, and an annual summary (forms 100, 101, and 102 are provided under the act). Good records provide data for good planning.
  - c. Describe as specifically as possible.
    - (1) Chronic or acute? Why?
    - (2) Where? By whom? Why?
    - (3) By whom? To whom? Why?
    - (4) Often informal counseling goes unnoticed.
    - (5) What individual or group education was offered by the company?
  - d. Including those occurring after work hours, as some of these accidents may be directly or indirectly work-related.
  - e. List the five major reasons.

SOURCE: From P. Serafini. Nursing assessment in industry. *American Journal of Public Health*, August 1976, 66, 753-760. (Author is now P. Serafini Blanco.)

Figure 5.17: Continued



organisational assessment strategy to establish the scope and size of health care need and utilisation. The assessment comprises:

- "1. A statistical analysis of injuries and illnesses (workers' compensation and medical benefits) to

Identify:

- \* Total number of incidents (frequency).
- \* Total number of lost time claims (severity).
- \* Total number of hospitalizations.
- \* Total dollars paid.
- \* Total dollars incurred.

Evaluate:

- \* Reporting effectiveness.
- \* Claims handling procedures.
- \* Health care provider utilization.
- \* Medical monitoring procedures.

Determine:

- \* Cost effectiveness of treatment.
- \* Rehabilitation effectiveness.
- \* Causal factors.

2. An appraisal of the cost and effectiveness of prevention and control measures currently in effect in relation to hiring and placement, on- and off-the-job health and safety functions and programs for employees and dependents, and post-illness/-injury procedures.
3. An evaluation of environmental, organization, and personal stresses on employees and dependents to identify high-risk persons. Higher levels of occupational and personal stress have consistently been linked to higher rates of accidents, injuries, illnesses, and corporate losses in general.
4. An inventory of employee interests in health promotion programs and their willingness to participate."

Barick and Jones go on to explain that the results of the initial assessment should "Provide information to determine what specific cost-containment measures and preventive programs are needed, as well as to "Serve as a base-line measurement to statistically



validate the impact of new and/or enhanced programs on losses."

By means of this assessment, several aspects of the organisation are analysed and correlated. It provides a claims history; an overview of management's philosophy, policies, and organisation through the evaluation of current programmes; and feedback from employees about their employer, job and personal lifestyles as a result of the assessment of stressful conditions. It is a pro-active assessment designed to facilitate programme planning which will enhance the quality of life and wellness of employees, and therefore work effectiveness.

In conclusion, the assessment of occupational health requires a comprehensive approach to determine the inter-relationships between the health status of the workers, the nature of the work, the work environment, and the organisation. It should include both positive and negative measures of health. In addition, the evaluation should go beyond the bounds of the workplace and include the influences of the wider community on individual and aggregate health status.

#### 5.5.3 Community health assessment

The conceptualisation of community health is dealt with in Chapter Two in an attempt to make the dimensions or attributes explicit. As has been explained in many places in this literature review, community health "is more than the sum of the health states of its individual members; it encompasses the characteristics of the community as a whole" (Pender, 1987, p. 32). Although it is argued by some that to

break it up into its parts will not give an accurate reflection of how it is constituted, it is necessary to be able to reduce it to parts, as these are the aspects that are more easily manipulated in order to enhance health and this, after all, is the objective for measuring health).

#### 5.5.3.1 Characteristics of a healthy community

The identification of criteria to assess community health is difficult due to the specificity and dynamic nature of community health, but generally concerns its competence. For this reason, Pender contends that it "is often defined implicitly through discussion of the community assessment process rather than explicitly through identification of the dimensions or attributes of a healthy community" (1987, p. 31). Despite the problems, Goeppinger et al. (cited in Spradley, 1990) note that community competence refers to the collective functioning of the whole unit and not to its various parts, such as families and individuals. Therefore, the degree of competence will indicate how well the community is functioning and developing and hence its health status. Cottrell (cited in Spradley, 1990, p. 384) states that a healthy community exhibits the following four characteristics:

- (a) Effective collaboration in identifying community needs and problems.
- (b) Achievement of working agreement regarding goals and priorities.
- (c) Consensus on methods of implementation for goal achievement.
- (d) Effective collaboration in the necessary actions.

In addition, Cottrell argues that the conditions necessary for community competence are: commitment of members; self-awareness and awareness of others among groups; clarity of situational (positional) definitions; articulateness of various subgroups; effective communication; conflict containment and accommodation; participation (community involvement); management of relations with the larger society; and machinery for effective decision making.

#### 5.5.3.2 Approaches to assessing community health

Using these characteristics and conditions, in combination with the work of Goeppinger and Baglioni, Meucke, and Klein, Spradley (1990, p. 385) suggests a list as a guide for assessing the health of a community, as follows:

- "1. A healthy community is one in which members have a high degree of awareness that 'we are a community'.
2. A healthy community uses its natural resources while taking steps to conserve them for future generations.
3. A healthy community openly recognises the existence of subgroups and welcomes their participation in community affairs.
4. A healthy community is prepared to meet crises.
5. A healthy community is a problem-solving community; it identifies, analyzes, and organises to meet its own needs.
6. A healthy community has open channels of communication that allow information to flow among all subgroups of citizens in all directions.
7. A healthy community seeks to make each of its systems' resources available to all members of the community.
8. A healthy community has legitimate and effective ways to settle disputes that arise within the community.
9. A healthy community encourages maximum citizen participation indecision making.

10. A healthy community promotes a high level of wellness among all its members."

This list could be criticised for bringing a political element into the criteria for community health and therefore being biased. This pertains particularly to the ninth point, which implies that unless there is a democracy a community cannot be healthy.

A common approach to assessing community health is to analyse it in terms of hierarchical system levels, ranging from the microlevel to the macrolevel (Pender, 1987). Individuals, families and small groups form the microlevel system, whilst the macrolevel system comprises organisations, associations, cultural aggregates and so forth. These systems are then assessed according to their structure, process, functions and reserves. Using a similar approach, Goeppinger (cited in Pender, 1987) suggests the assessment of communities according to the three dimensions of status, structure and process. The multiple measures that are used to assess these are:

- "1. Status dimension - morbidity, mortality, life expectancy, risk factors, consumer satisfaction, mental health, crime rates, functional levels, worker absenteeism, infant mortality
2. Structural dimension - community health resources measured by utilization patterns, treatment data, and provider-population ratios; social indicators measured by dependency ratios, socioeconomic and racial distributions, and median education level
3. Process dimension - effective community functioning or problem-solving which results in community competence as evidenced by commitment, self-other awareness and clarity of situational definitions, articulateness, effective communication, conflict containment and accommodation, participation, and management of relations with larger society."

It can be noted that Goeppinger has used Cotrell's conditions for community competence to indicate the process dimension. These dimensions are used to assess the community's ability to meet collective needs through problem identification and the management of interactions within the community and between the community and the larger society (Goeppinger, cited in Pender, 1987).

Clemen, Eigsti and McGuire (1981, p. 295) stress the notion of balance and inter-relatedness of components in determining the health of a community. "When diagnosing community needs, it is important to examine all components of wellness and to identify community dynamics that detract from or enhance community growth." Figure 5.18 depicts the components of the community whilst the dynamics of the community as the components relate and affect one another are shown in Figure 5.19.

The assessment of the social climate in relation to its contribution to the health of the community, has been emphasised in various places in the literature review (4.2 and 4.3). In this regard, Spradley (1990, p. 153) proposes a two-phased cultural assessment to identify health behaviour patterns prescribed for group members and as a means of understanding a community (see Table 5.11). Pertinent cultural data to be gathered includes:

- "1. Community value systems
  - a. customs (dress, nutritional habits, matriarchy versus patriarchy, emotional reactions)
  - b. beliefs (religious and otherwise)
  - c. taboos
2. Goals and expectations of the community



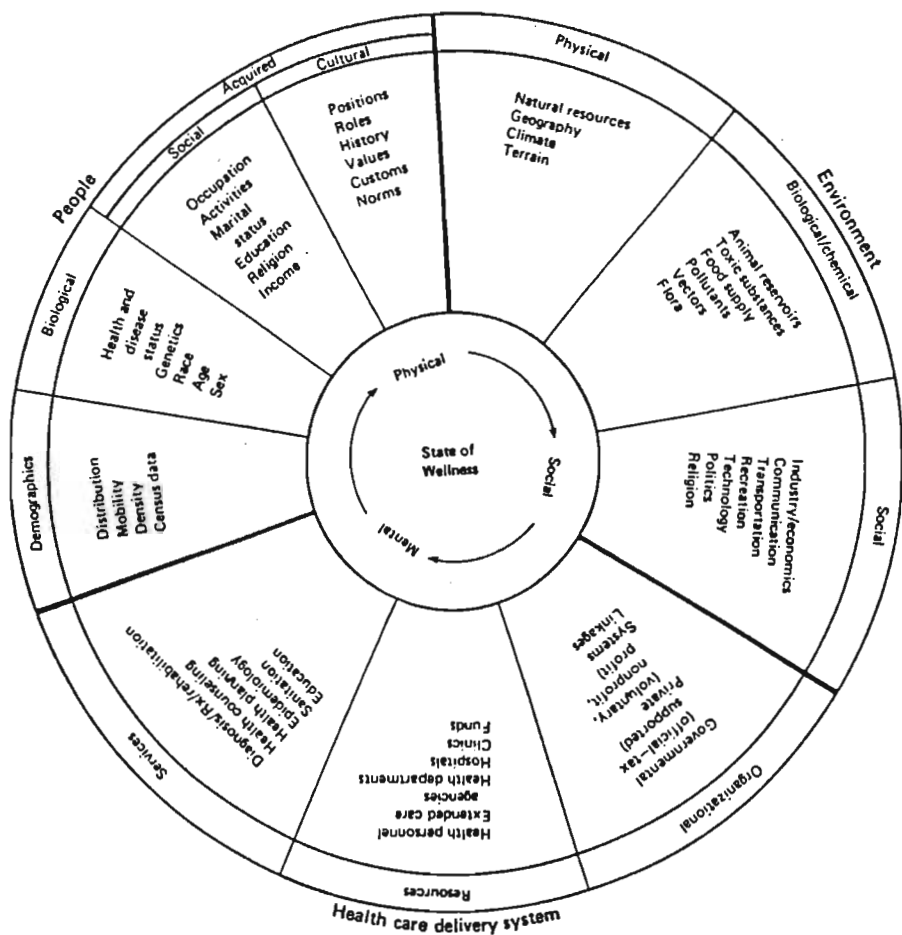


Figure 5.18: The components of the community - its people, the environment and health care services (Clemen et al., 1981, p. 296)

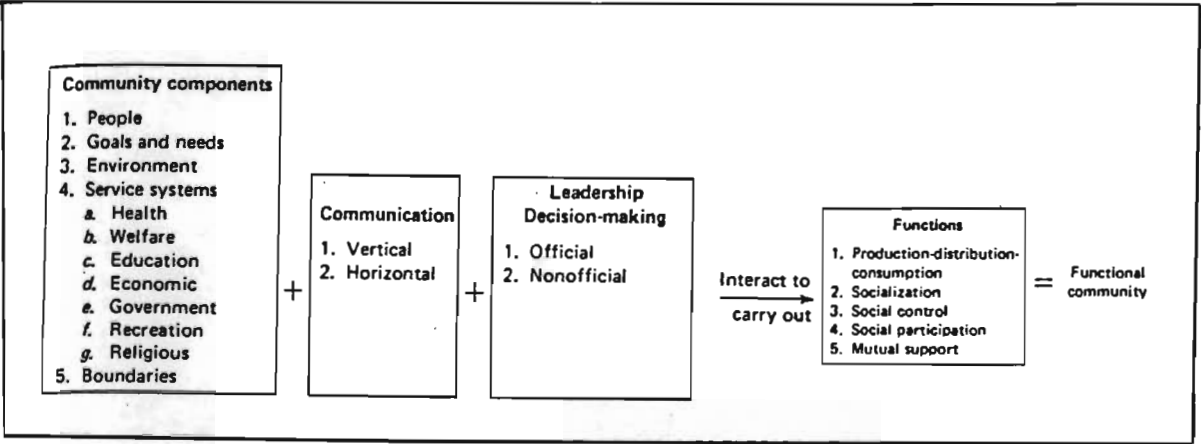


Figure 5.19: Inter-relationships between community components (Clemen et al., 1981, p. 61)



<i>Two-phased Cultural Assessment Process</i>	
Phase I – Data Collection	
Stage 1	Assess values, beliefs, and customs (e.g., ethnic affiliations, religion, decision-making patterns).
Stage 2	Collect problem-specific cultural data (e.g., cultural beliefs and practices related to diet and nutrition). Make nursing diagnosis.
Stage 3	Determine cultural factors influencing nursing intervention (e.g., child-rearing beliefs and practices that might affect nurse teaching toilet training or child discipline).
Phase II – Data Organization	
Step 1	Compare cultural data with – standards of clients' own culture (e.g., clients' diet compared to cultural norms); – standards of the nurse's culture – standards of the health facility providing service.
Step 2	Determine incongruities in above standards.
Step 3	Seek to modify one or more systems (clients', nurse's or the facility's) to achieve maximum congruity.

Table 5.11: Cultural assessment process (Spradley, 1990, p. 153)

3. Community's definition of health
4. Values and attitudes toward health
5. Existing preventive health behaviour
6. Perception of health problems
7. Acceptability of health program(s)
8. Perception of the purpose of health program(s)"

#### 5.5.3.3 Methods of community assessment

The community assessment is defined as a process in which people's health needs are assessed and certain key indicators of health status and community organisation are evaluated by health professionals and community members (Edwards & Lyons, 1983). Logan and Dawkins (1986) explain that this process involves the

collection and analysis of data, upon which the status and needs of the community are based. They note that the reasons for assessing a community (which will then determine the approach and methods) may also include the identification of high-risk groups, the needs of minority subgroups or people's attitudes to health, health service planning and policy making, and the allocation of resources. Apart from these, it is imperative that baseline data be collected for later comparison, in view of the dynamic nature of community health status (Green & Anderson, 1986; Kark, 1981). Unfortunately, data collection is often problematic owing to the lack information systems. Household surveys and general screening exercises may be too costly, whilst national surveys may fail to provide data that is specific enough to be of any great use (Cerkovnij, Murnaghan, Schmincke & Sokolov, 1979).

It is generally recommended that an accurate community assessment requires an assessment methodology that combines at least three or four methods with the inclusion of the subjective and objective dimensions. Goeppinger (cited in Pender, 1987) has listed five data collection methods, these being informant interviewing, participant observation, mobile survey, secondary analyses using pre-existing data, and community surveys. Informant interviewing is an essential method as this will add the subjective dimension of health. Recently, there has been a strong move to involve community members in the actual assessment process to ensure that health care is relevant and appropriate for perceived needs. This is known as participative research (Alderson, 1983; Clemen et al., 1981; Shirreffs, 1982). The needs assessment strategy, outlined by Polit and Hungler (1985) and described in 5.4.2 is essentially a community assessment.

The mobile or windshield survey gathers data about the community from observations made whilst driving or walking around the community. These observations concern people, their life-styles and their environment (Logan & Dawkins, 1986; Pender, 1987).

"Participant observation is the data collection method wherein the data collector is directly or indirectly a part of an ongoing social setting to observe and analyze what takes place in the setting" (Lofland, cited in Logan & Dawkins, 1986, p. 212). Sampling is non-random, sample size is usually small and the types of data collection include record examination, interviewing (usually without a questionnaire), direct observation and participant in events as they occur (Logan & Dawkins, 1986).

Key informant interviewing involves the collection of data from key people in a community. Usually these people are 'cultural guides' to understanding the community. However, because the information obtained from them concerns their individual perceptions and experiences, efforts must be made to ensure that a balanced view is obtained. This will be possible if informants are selected carefully and other data collection methods are used. This method provides qualitative data that is not always available through statistical methods. However, the survey is a better tool for health needs assessment than the key informant method, which is suited to the acquisition of more detailed and specific information (Logan & Dawkins, 1986).

The nominal group process is another method of gathering data about a community. It is "a structured

meeting which seeks to provide an orderly procedure for obtaining qualitative information from target groups who are most closely associated with the problem area" (Van de Ven, cited in Logan & Dawkins, 1986, p. 220). The information pertains to the way people feel about their health and the health services available to them.

In the 1980's, the growing awareness of the limitations of traditional health indicators, that measured the negative end of the health spectrum, prompted a search for new measures of positive health and quality of life to supplement the traditional ones (Whitehead, 1988).

Most of the new measures have been health surveys that could be administered to a cross-section of the population or on a longitudinal basis. Whereas early surveys focussed on physical dimensions such as height, mass, haemoglobin, urinalysis and blood tests, these more recent approaches incorporate subjective elements of health concerned with functioning and actualisation.

Breslow and his colleagues, of the Human Population Laboratory, (cited in Greene & Simons Morton, 1984, p. 21) produced a seven point index to measure physical health, that included disabilities and chronic conditions at the low end of the scale and classifications for low, medium and high energy levels for asymptomatic individuals at the top of the scale. An eight point index of mental health covered a range of subjective feelings from "depressed or very unhappy" to "on top of the world", whilst the social health index included occupational status, marital status, number of close friends and community involvement. The indices were composed of questions that the respondents could answer and did not require clinical procedures,

thus making it a relatively low cost instrument that could be used to assess large numbers of people. The device was found to have good inter-observer reliability. The validity was more difficult to evaluate statistically, due to the subjective judgements involved. For example, the decision as to the importance of marital status to social well-being can only be based on what is appropriate for the group under consideration and cannot be ranked for a universal context.

Working independently of Breslow et al., Sackett et al. (cited in Greene & Simons Morton, 1984, p. 22), also produced a similar health index questionnaire, that would "go beyond catalogueing of symptoms, illnesses and catastrophes to the identification, when it existed, of good or even excellent function."

Other examples of measurement strategies that have been devised to achieve a more comprehensive assessment of health are briefly described hereafter.

In 1967, the WHO initiated a landmark health survey by means of household interviews, as a comparative study of health care and the use of health services in seven countries. In order to evaluate these aspects, the prevailing level of health of these communities had to be assessed. The study was noteworthy because it incorporated the dimension of perceived morbidity into the assessment of health. It defined health in terms of functioning and not just the absence of symptoms, but it did not include any other measures of positive health. In the study, healthy people did not acknowledge having any indicators associated with social dysfunction, perceived morbidity, psycho-biological dysfunction, and perceived



dental or visual morbidity (or else only low levels of the indicators assumed not to interfere with their social functioning). Severity of dysfunction was assessed according to a composite measure of the amount of bother, hurt or worry caused by it, or the desire to have it treated by health personnel (Kohn & White, 1976).

Some cognisance of the lay referral system was taken, but the study was limited in that it identified a few conditions that the researchers considered important indicators of health. By virtue of the fact that it was a comparative study, it did not accommodate cultural and social differences in health and illness definitions. Furthermore, by measuring the active use of health services it did not measure unperceived health need or the use of alternative health care. Nevertheless, it has provided a useful approach to measuring health status and its shortcomings could be supplemented by the incorporation of additional measures.

Whitehead (1988) cites the Health and Life-Style Survey that includes an illness score derived from a symptom checklist, physiological measurements, life-style information, socio-economic status, self-assessment of health and health behaviour.

The Nottingham Health Profile (Leavey & Wilkin, 1988; Whitehead, 1988), a well-known health survey instrument includes the emotional, physical and social effects of illness on the everyday life of an individual. It is intended to provide a profile of health and not a single measure of health status, and defines the nature of health problems in a population by means of a two part profile. The first part



evaluates six areas that have been identified as problematic for the lay population. These are pain, energy, physical mobility, sleep, social isolation and emotional reaction. The second part assesses the effect of these health problems on paid employment, the ability to carry out work around the house, effect on relationships, sexuality and so forth. Results yielded by this tool show that it equates well with traditional measures like the presence of chronic illness and seeking of medical care, but that it also offers other dimensions considered to be more valuable for health care system planning than previous measures of demand and use of health services.

Yet another survey that has been widely used is the British General Household Survey, which also examines the levels of health and illness in populations through self-reports on health, illness and restriction. Compared with the Nottingham Health Profile, this survey covers a variety of other areas and so the specific health component is more general. However, it does permit respondents more freedom in defining health and illness, the Nottingham Health Profile on the other hand takes cognisance of the multi-dimensionality and complexity of health as a concept (Leavey & Wilkin, 1988).

One problem with many of the health surveys is that the criteria that are selected to measure variables often differ. Leavey and Wilkin (1988) state that what is important in assessing results from a survey is to have sufficient information about the properties of the measure, particularly the aspects of health and illness that have been addressed. This again supports the earlier contention, that the selection of the measure must be in accordance with the

reason for wishing to make the assessment and that the subjective nature of health will not permit the development of a universal indicator of health.

Carr, Szapiro, Heisler and Krasner (1989, p. 705) conducted a study that used sentinel events as indicators of unmet needs. They define sentinel events as "negative health states - diseases, disabilities, and deaths - that are deemed unavoidable given current medical and public health knowledge and technology." There are two basic pre-requisites for the measurement of sentinel health events. Firstly, there must be a consensus about what, for a specified time and place, are preventable diseases, disabilities and deaths, and secondly, reliable and detailed data must be available. The first pre-requisite may be met by a multidisciplinary working group, which devises lists of potentially preventable and treatable conditions. Carr et al. cite one such group that developed three lists of events. These were:

- \* single-index cases - comprising conditions that were thought to be so clearly avoidable that even one case was deemed sentinel, for example botulism, congenital rubella and death from cancer of the cervix;

- \* rate-event indicators - containing a list of conditions for which a rate of occurrence of deaths or diseases above a predetermined acceptable level is considered sentinel; and

- \* medico-social and psychiatric problems - including alcoholism and homicide.

Some of the events were defined as sentinel only when linked to age (for example, death from acute respiratory disease is sentinel in people under 50 years), special circumstances or to specific risks,

exposures or hazards (such as cancer of the bladder occurring in association with exposure to aniline dyes and cigarette smoking).

Sentinel events can be used to assess quality of health care, the level of health and unmet health needs in geographically defined populations, the effectiveness of the health care system, and the health significance of behavioural, environmental and other factors. The information may then be used for effective health care planning and evaluation. "Analysis of these adverse health outcomes emphasizes the aggregate effect of multiple determinants of health, recognising that health policy embraces concern for the way our society provides a broad range of supports and services for its people" (Carr et al., 1989, p. 706). Although sentinel events are concerned with negative measures of health, the focus on preventability introduces a new dimension, and this can be important for prioritising health problems. Sentinel event determination must be linked to specific areas or populations and cannot be applied globally (except for a very small number conditions). Carr et al. (1989) list potential sources of data as vital statistics, mortality and notifiable disease data, clinical records and hospital discharge information. The accuracy of such data has already been questioned and this must represent a drawback in the use of this method for the evaluation of health services. The study showed that most of the "potential sentinel occurrences are associated with very few different conditions", suggesting that the development of smaller sets of indicators may be practical and useful. They argue that batteries of so-called tracer events could be devised to obtain profiles of different aspects of the health care system. Groupings of tracer events

could be based upon primary modes of intervention, for example public health indicators, environmental indicators, behavioural or self-care indicators. Alternatively, they could be grouped according to their most appropriate use such as community assessments or provider-specific studies on quality of care. The major weakness of with this strategy is the exclusion of the subjective dimension of health.

In conclusion, an accurate and comprehensive community health assessment must be based on a multi-dimensional conceptualisation of health. It will therefore require the inclusion of a range of methods and the involvement of the community members themselves.

#### 5.6 Conclusion

This chapter has provided a brief review of some of the approaches and methods of measuring health. The variation in these illustrates the need to consciously link the concept of health with the strategy for measuring it. Further, it has demonstrated the complexity of the task that occupational health nurses face when attempting to determine health needs to plan effective health programmes.

The most useful aspects to emerge from this review, for incorporation into the strategy for measuring aggregate health in the workplace, are the epidemiological method with the use of indicators, approaches to determining health needs and the measurement of health status at the individual, organisational and community level.

## CHAPTER SIX: DEVELOPMENT OF A MODEL FOR THE DESCRIPTION AND MEASUREMENT OF AGGREGATE HEALTH STATUS

The first five chapters have involved a review of the concepts related to health and approaches and methods of measuring health status. In this chapter, the concepts will be used to develop a conceptual framework and a model of aggregate health in the organisation (or workplace), towards the fulfilment of the fifth and sixth research objectives.

The model will be used to devise a strategy for the assessment of health status and identification of health needs of workers, that can be used by a nurse to plan an occupational health programme. This is important for nursing because

"until nursing science moves from a pre-paradigmatic to a paradigmatic state in its evolution, both its legitimate problems and the corresponding methods for studying them are still in a state of becoming." (Wilson, 1989, p. 171)

The development of a paradigm to guide research demonstrates maturity in a scientific discipline, which is important for nursing in general, and occupational health in particular.

### 6.1 Supportive arguments for the development of a conceptual framework and model

Any research study requires a frame of reference or framework, which is an abstract, logical structure that is used to "organize the development of the study and provide a context for the interpretation of the findings" (Burns & Grove, 1987, p. 155). This interpretation enables the findings of the study to be generalised to settings outside of the specific research setting, which is important for the study to be of use.

Concepts are used in the construction of frameworks, and these may be defined as "linguistic labels that we assign to objects or events". They can have a theoretical definition whereby they are defined in relation to other concepts, or they may have an operational definition that "links the concept to the real world and identifies empirical referents (indicators) of the concept that permit observation and measurement" (Wilson, 1989, p. 279). Both types of definition are necessary to relate the theoretical perspective to the research aims. Groups of concepts are called constructs. The focus of this study is on health status, which is a construct.

This study entails the construction of a conceptual framework as opposed to a theoretical framework. A conceptual framework is "an organization or matrix of concepts that provides a focus of inquiry", it is loosely constructed, and has neither been published nor tested previously (Burns & Grove, 1987, p. 156). In the first stage of the development of a conceptual framework, concepts are identified and



selected from a number of sources, on the basis of their relevance to a theme. Their meaning in the context of the study is carefully investigated. The second stage involves the proposal of relationships between them, with some indication of the direction and strength of these relationships. The relationships can be illustrated in a model, which is important as it is "the relationship and not the concept that is tested in a study" (p. 162).

A model, like a conceptual framework "represents some aspect of reality, concrete or abstract, by means of a likeness which may be structural, pictorial, diagrammatic or mathematical" (Bush, cited in Wilson, 1987, p. 281). The minimal use of words is intended to increase the understanding of the proposed relationships. Burns and Grove contend that for a conceptual model to be of value, it must be able to organise all the components of the study, and each concept must be operationally defined. The operational definition must approximate the theoretical definition as closely as possible to improve the meaning of the research findings.

A theoretical framework, on the other hand, comes from a theory that has been published, and has concepts and propositions which can be tested. The concepts in a theoretical framework "are narrowly bounded, specific, and explicitly interrelated" (Wilson, p. 282). The relationships proposed between the concepts are descriptive, explanatory, or predictive (Reilly, cited in Wilson). Whilst a conceptual framework does not define these relationships as precisely, it guides research leading to theory development and can serve as "the springboard for the generation of hypotheses to be tested" (Polit & Hungler, 1985, p. 66). Criteria for

classifying abstract formulations as theory vary and are sometimes loosely applied. However, some metatheorists will only classify it as such if it has been previously tested (Burns & Grove, 1987)).

The researcher's contention that this study involves the development of a conceptual and not a theoretical framework is supported by the following argument. A number of concepts will be selected from a review of the literature on the meaning of health. They have not come from any one theory but from a number of sources including empirical observations of the experience of health and influences on it, and will be combined to form an explanation of the constitution of health in the context of the work organisation. Therefore, this particular construct and model has not previously been published or tested. Although relationships between the concepts will be indicated, their definition will not be sufficiently precise to make predictions that will hold true under all conditions. The two stages of the construction of a conceptual framework will be adhered to, and a model developed accordingly. The operationalisation of the concepts from their theoretical form will be an important part of the study, and the findings from the testing of their relationships in a real setting could serve as a springboard for theory development.

Before the conceptual framework can be constructed, a fundamental decision is required. This is to choose whether to adopt either a holistic or a comprehensive model of health. Holism has a philosophical value, which is to view something in its entirety and not to reduce it to parts. In fact, there is only one part in a holistic model, and to break it into a number of components is to lose the meaning of

the whole. A comprehensive model claims to have all the parts of the whole and is therefore the antithesis of holism. Newman (cited in Stevens Barnum, 1990, p. 63) observes that a "holistic approach is not to be confused with, or construed to mean, a multivariate approach. It is not the summing up of many factors (psychological, social, physiological, and so on) to make a whole. It is the identification of patterns which are reflective of the whole."

Whilst there is support for viewing the organisation from a holistic perspective it also has distinct disadvantages. Principally, these arise from problems with research and measurement, and the operationalisation of concepts into variables. The methods used are usually a form of phenomenology or a dialectic process. These would have advantages for conceptualising health since they would place sufficient emphasis upon the experience of health and illness, however their use could make it more difficult to devise a practical strategy for application by most nurses in the occupational health setting. As the main purpose of the study is to devise such a strategy, a comprehensive model of health seems more appropriate and will therefore be developed. Consequently, the logistic method will be used, whereby the "entity is organized by reference to its parts and their relationships to each other." Reasoning will be in the logistic mode, "as piece [is] added to piece and relationship added to relationship" (Stevens Barnum, 1990, p. 46). However, a phenomenological approach (holistic in character) will be incorporated when aspects of the experience and perception of health require investigation.

The importance of a conceptual framework to

organise a number of concepts and provide a context for the interpretation of findings is underscored by the complexity of the meaning of health. Ample evidence of this is provided by the bewildering multiplicity of approaches to its conceptualisation and measurement, that are discussed in the literature review. Each one focusses on a particular aspect or concept, often ignoring others. Although the conceptual framework embraces this complexity by combining a number of aspects, it aims to do so in a coherent manner through the construction of a model to facilitate understanding. Therefore, the selected concepts and their inter-relationships that form the conceptual framework and serve as the basic principles of the model will be explained below.

## 6.2 Basic principles of the model

### 6.2.1 Health is dynamic

Health is dynamic and in a constant state of change. Consequently, health assessment should be an ongoing process.

### 6.2.2 Health is time related

Health is not without a history or a future.

Current health status is influenced by previous experience and health traits, whilst past and present health status will influence future health status.

### 6.2.3 Health is an aggregate concept

The health of an individual and a group are conceptually different, though inter-related. The

health of a group is more than just the sum of its individual members because it also includes the characteristics of the group as a whole and the manner in which it functions in relation to its members and other groups. The term aggregate health will be used to denote health at the collective level, as an aggregate refers to a composite or compound (Sykes, 1976).

This notion is frequently neglected when assessments of health are made in order to plan occupational nursing programmes. It is essential to recognise that one of the important social systems that brings people together is the organisation whose prime function is the performance of work for economic returns. This aggregate of individuals, by virtue of their common goal of work and shared values and the manner in which they influence behaviour within the group, exhibit many of the salient characteristics of a community. Support for the contention that the organisation or workplace may be considered a type of community comes from Green and Anderson (1986, p. 132), who note that a community is "a social unit in which there is a transaction of common life among people making up the unit" and that as "a social group, functioning with norms of behaviour and organizing of resources, the community regulates both the environment and behaviour." Therefore, concepts of community health are considered applicable to the conceptualisation of organisational health.

Membership of this work community, hereafter referred to as 'the organisation', has implications for the health of the individual worker, just as the health and behaviour of the individual are able to influence the health of the organisation. Therefore, the



development of an aggregate model of health, that takes account of individual health, is considered to be both justified and necessary. At the same time, the organisation is part of a larger community, which is in turn part of a larger social system. That social, economic, organisational, ecological, political, and legislative factors, which may come from within or without the organisation, are able to influence its environment also demonstrates the inter-relationship between the organisation and the wider community. The individual may also reside in this larger community or commute to work from a distant one. These larger communities have the potential to influence the health of the organisation and the individual worker, and so must also be considered when planning to promote health in the workplace. Figure 6.1 shows the interaction between these. The validity of this is reflected in the increasing concern in occupational health care services for on-the-job and off-the-job issues relating to health. Although these communities have been identified on the basis of spatial boundaries, it is important to understand that other criteria can be used, such as common goals and a set of shared norms and values. Therefore, the individual may belong to a number of communities.

#### 6.2.4 Health is multidimensional

Firstly, health has both an objective and subjective dimension. The objective dimension concerns the observable parameters, most often physical measures, which demonstrate the state of health of that individual or group. However, instruments for the measurement of psychological and social health by



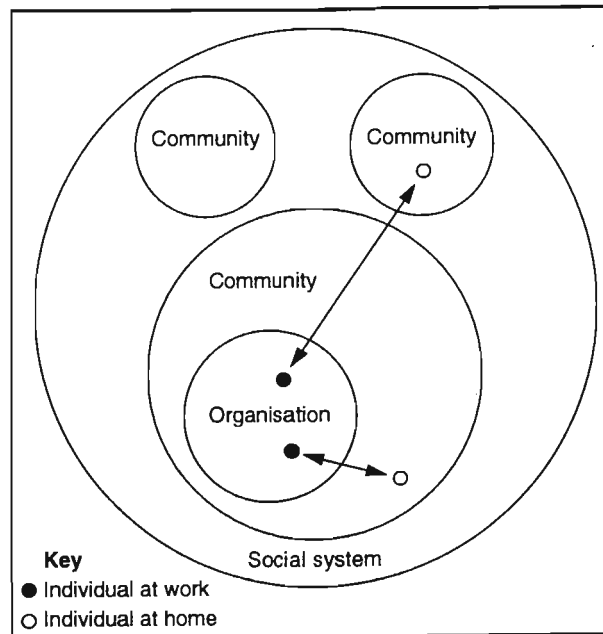


Figure 6.1: The relationship between the health of the individual, the organisation, the community and the social system

observers are becoming more common. It is considered to be objective in the sense that it is other-reported and so there is inter-subjectivity and social consensus in making the evaluation. Health professionals have focussed on this dimension as it has been regarded as easier to measure and they are believed to possess knowledge that enables them to make accurate judgements about it. Although in reality the reliability and validity of some of these measurements is questionable, due to difficulties in establishing standards of normality and inter-observer measurement errors.

The subjective dimension refers to the experience of health or illness by the person or group being assessed and is therefore self-reported. For lay people, the ability to function and derive pleasure from living usually serve as criteria for deciding

their level of health. These decisions are socially and culturally specific, and are made according to their personal frame of reference. They have a profound influence upon their perception of health needs and health-related behaviour. Therefore, as problematic as it is to assess, it cannot be disregarded by the occupational health nurse whose aim is to protect and promote their health through changes in lifestyle. Unless these perceptions are taken into account when planning a health care programme it is unlikely that their participation will be obtained.

Secondly, health has physical, psychological, and social dimensions, all of which must be considered when assessing health. In an individual, physical health is usually evaluated according to the ability to perform everyday activities of living, including work, and the integrity of the body. Psychological health may be assessed with regard to the positive or negative state of the affect and cognitive or mental functioning. The latter is indicated by alertness, attention, memory, and orientation. Social health is generally judged in terms of the capacity for task and role performance, access to a system of social support, and the nature of social interaction. These dimensions are also features of aggregate health. Furthermore, each of them is able to influence the other. For example, an individual who is in a state of peak physical fitness will be more likely to experience effective cognitive functioning and a positive affect, in addition to performing social tasks well, than when he feels ill. Similarly, it has been shown that the immune system is depressed in a person who has lost their spouse and whose social support system is inadequate.

Implicit in these aspects of health is the

acceptance that health is contextually specific and there can be no universal standard of health.

#### 6.2.5 Health and illness are at opposite ends of a continuum

Health is a dynamic state of optimum functioning and the experience of high-level wellness, whilst illness is the converse. They are both determined according to subjective and objective criteria, as explained in 6.2.4. Health is represented as one end of a continuum, with illness at the other end. In contrast, disease, which is a designation assigned by health professionals principally upon signs (objective criteria) and symptoms (subjective criteria), does not stand in a one to one relationship to illness. Therefore, it is possible for an individual to have a disease and not perceive himself as being ill, or conversely to feel ill and not have a disease according to a health professional. By the same token, an individual who is functioning well and obtaining satisfaction from living despite having a chronic disease can be described as manifesting health within the limitations of the disease.

Figure 6.2 shows the relationship of disease to illness. The shaded area indicates the instances when there is agreement between the individual's experience of illness and the health professional's designation of disease. The unshaded areas represent the lack of agreement so illustrating that they are not in a one to one relationship. The degree to which this happens can be culturally determined to a large extent. A commonly encountered example occurs amongst traditional Zulus, who often attribute physical symptoms to bewitchment or the incurment of the dissatisfaction of the ancestors

and not to a disease. Thus, a health professional may detect signs of a disease and recommend that the individual take action that is not congruent with his or her cultural beliefs.

The implication of the representation of health on a continuum with illness is that health assessment must be based on the experience and perception of the individual being assessed and not merely the judgement of the occupational health nurse. This is important as it is a model that will give rise to a programme of activities to promote health and prevent illness and

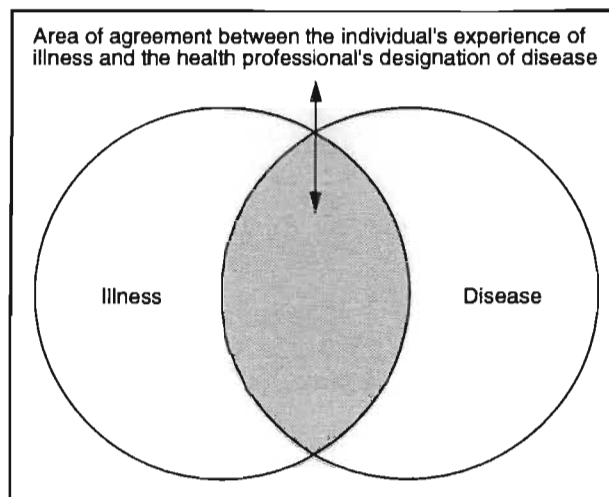


Figure 6.2: The relationship of illness to disease

disease, which could require that clients modify their behaviour. Such a programme cannot be effective unless it is planned with clients and considers their

perceptions and understanding of the situation, and willingness to take action. Support for this allegation comes from an examination of the meaning of health and illness behaviour. Health behaviour is defined as the performance of certain activities by people who perceive themselves as healthy in order to prevent illness or allow its early detection. Illness behaviour constitutes those actions that people who see themselves as ill take to define their health status and seek assistance to correct the situation. When others endorse the perception of illness, the individual assumes the sick role and is expected to participate in treatment, whether it be from a health professional or an alternative health practitioner.

#### 6.2.6 Health is a positive state

Health is conceived as a positive state, as opposed to the more passive state of equilibrium or negative state of the absence of disease and injury. In terms of this conceptualisation, a person who is placed on the health end of the continuum and experiences high level wellness, derives fulfilment and satisfaction from the process of living, within his or her particular context and potential. This applies equally to the woman who earns sufficient income from low level work to sustain her family, which gives a sense of fulfilment in that she is using resources available to her to the best of her ability, as it does to the high placed executive whose work provides a challenging and creative outlet for her creative abilities. Thus, the attainment of actualisation is contextually, individually and socially determined. Not only is there an ongoing adaptation to changes within the individual, the group, and in the environment, but there is also a process of growth and

development. Therefore, the realisation of potential can pertain to the physical, psychological and social dimensions of health.

By virtue of the previous two aspects, (6.2.5 and 6.2.6) the conceptual framework and the model include well people, rather than just sick or diseased people. Consequently, the focus is on identifying the degree of health or illness on the continuum, rather than looking for signs and symptoms to establish whether the person or organisation has a disease. Again, this is important because it will be used for planning programmes to promote health in the workplace.

#### 6.2.7 The influences on aggregate health

The influences on aggregate health are grouped into four sets, as advocated by LaLonde and subsequent researchers (cited in Green & Anderson, 1986). These are human biology, environment, lifestyle or behaviour, and health care organisation. Each of these sets can exert an influence upon the others and consequently the model depicts an ongoing interaction between them.

The assessment of aggregate health status in the organisation will be based on an analysis of these sets of influences, in order to identify the health needs. Consequently, they are represented as components of organisational health. Similarly, the health status of other communities which are able to influence the health of the organisation and the individual worker may be assessed according to the same sets.

Regarding the individual worker, the dimensions of health are physical, psychological, and social, in accordance with the conceptualisation of health. As



there is reciprocity between the health status of individuals, the organisation, and the community, these dimensions are embodied in the four sets of influences on health.

Human biology refers to the set of influences that stem from the biological make-up of humans. These include natural growth and aging, genetics, and physiological aspects. Therefore, the physical health of individual members will contribute to this set. For example, a large number of older individuals in an organisation could influence the level of risk associated with certain occupational hazards. Conversely, human biology can influence the physical and psychological health of an individual. There are many genetic conditions that could be used as examples to illustrate this. Furthermore, age can have a bearing on health so that a particular level of physical fitness may be appropriate in an older person and not in a younger person. Human biology also accommodates the epidemiological concept of host.

The second set of influences emanate from the environment and are, by definition, external to the individual. It comprises the physical, chemical, biological, and social environments. The social and psychological dimensions of individual health contribute to the social environment, whilst the environment in turn has the potential to influence physical, psychological, and social health in individuals.

Lifestyle is the third set of influences. These are clusters of behaviour that are shaped by social, cultural, and psychosocial factors. They can strengthen or weaken the health of individuals, the

organisation, or the community. Examples would include dietary habits, responses to stress, and safety behaviour. Therefore, there is a close relationship between lifestyle, as a set of influences, and the social environment. The psychological and social functioning of individuals contribute to lifestyle trends in an aggregate setting. Likewise, lifestyles in an organisation or community may influence the physical, psychological, and social health of an individual.

The fourth set of influences relate to the organisation of health care, and include the nature of the health care provided in the organisation and the community as well as the way in which it is used. The physical, psychological, and social dimensions of individual health determine its provision and use, whilst the health care system can have a profound influence on the physical, psychological, and social health of an individual. For example, the doctor who labels a worker as incapable by booking him off work, when the worker does not perceive it as necessary, may prevent him from performing a social role and so impair his social functioning.

Figure 6.3 shows the relationship between the concepts of health that have been discussed up to this point and that serve as the foundation for the model. It is important to note that individual and aggregate health is represented in the model. An ongoing interaction occurs between them and their components, which introduces the dynamic feature of health.

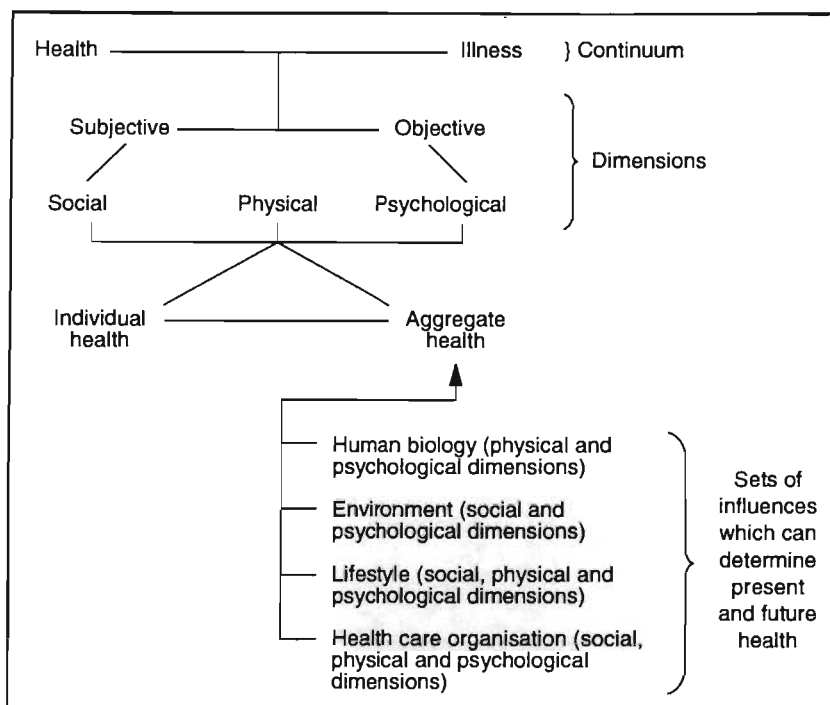


Figure 6.3: Schematic diagram showing the relationship between some of the concepts that have been combined to form the conceptual framework

The influences on health that have been categorised into the four sets can operate as stressors or supports, which interact to either weaken or strengthen the health of the individual, group, or community. Their designation as a stressor or support can be subjectively or objectively defined. For example, an individual who feels his superior is unduly critical of his work performance, but who has a good social support

system at work, may not perceive this treatment as stressful. In fact, if he is able to handle it well his status in the organisation may increase. This illustrates the subjective perception of whether an influence is defined as a stressor or a support. In contrast, the health of a worker who is exposed to a dangerous chemical over a period of time will be weakened whether he perceives it as a negative influence or not. This is an example of the objective definition of an influence as a stressor. It does not require the endorsement of the client to be categorised as such. The notion of health being strengthened accommodates the conceptualisation of positive health, rather than merely an adaptation to changes. At the same time, the effects on their health may not be evident until much later and therefore the time aspect is incorporated.

### 6.3 Diagrammatic description of the model

The basic principles of health described thus far have been combined to produce a model of aggregate health, that is shown in Figure 6.4. The individual is represented as the core, passing through the organisation and the community. This demonstrates that the individual is a member of the organisation and can influence its health, just as the organisation can influence the health of the individual. Similarly, the individual is a member of other communities and may influence their health much as they can influence the individual's health. Although only one community has been shown, this should be widely interpreted to include as many as are appropriate. Therefore, it is also possible for the individual to bring health influences from other communities to the organisation,

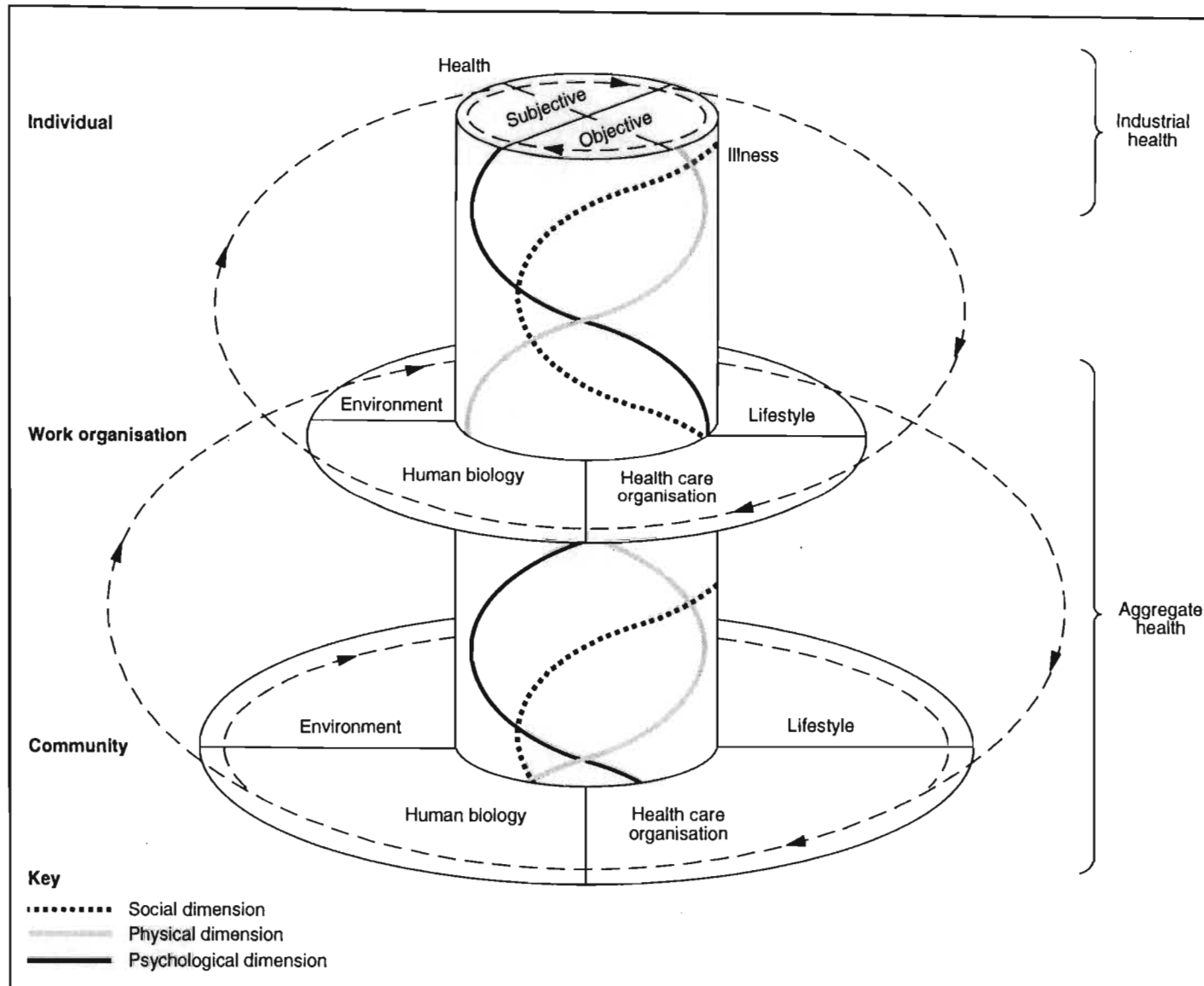


Figure 6.4: The model of aggregate health

which may not have any direct relationship with these communities itself. Furthermore, the organisation is situated in a wider community or social system which can influence its health, just as this community can influence organisational health.

At the aggregate health level, each entity, be it the organisation or other communities, is represented by a circle with four components comprising the sets of influences on health. These are human biology, environment, lifestyle, and health care organisation. They interact within and between each entity. This dynamic interaction is indicated by the arrows that move in a helical fashion around the circles.

In the centre of the core symbolising the individual are the five dimensions of health. This illustrates that they are features of both individual and aggregate health. In the latter case, they are incorporated in the four sets of influences on health as shown in Figure 6.3 and explained in 6.2.7. Once again, the use of helical strands to denote the physical, psychological, and social dimensions demonstrates the dynamic and interactive nature of their contribution to health. The health-illness continuum is also in the core, which indicates that this model includes healthy people and can therefore be used for planning health programmes that encompass health promotion.

The only features that have not been represented in the model are the time aspect (see 6.2.2) and the notion of health as a positive concept (see 6.2.6). However, it has been explained in 6.2.7 that influences within the components of aggregate health can interact



to weaken or strengthen health, which in the latter case incorporates the concept of positive health. Both aspects will be addressed in the description of the use of the model in the measurement of health (see 6.4).

#### **6.4 The measurement of aggregate health based on the model**

The model depicts health in the workplace by means of theoretically defined concepts. These were derived from a combination of empirical and theoretical sources. It is now necessary to systematically discuss the operationalisation of these concepts to indicate how health can be measured.

The process of operationalising concepts involves the linking of abstract theoretical definitions to the real world by means of variables that will serve as indicators of the phenomena under consideration. They may then be observed and measured. Great care must be exercised in the process of this translation to ensure that these operationalised definitions approximate the theoretical definitions as closely as possible. When composites of variables are used, some testing of the empirical correlations between them is required if this has not already occurred. The second phase of this study will involve an evaluation of the degree of correspondence between the theoretical and operationalised definitions.

A great number and variety of variables that can be used for measuring health were discussed in the literature review. A comprehensive range of these has been selected from them for use in this study. They variables could either be presented as "a profile of

specific values or as a composite score or index" to indicate aggregate health status (Noack, 1991, p. 97). The latter approach is rejected as it would necessitate the weighting of individual variables in relation to others and this is a difficult process that is particularly subject to error. A further problem arises when composites of variables are used, as they can be combined in a variety of ways each yielding different scores and therefore having different meanings.

Consequently, the form, prevalence, distribution and relationships between these variables in an organisation will be analysed to produce an individual profile for each worker and a broad profile of aggregate health.

#### 6.4.1 Description of the variables selected for the measurement of aggregate health

The variables are grouped into four broad categories pertaining to demographics, residence, work, and health, as shown in Figure 6.5. The categories of residence, work and health are further divided into subcategories. The centrality of demographic variables in relation to others is denoted by their placement in the middle of a circle, with the others ranged around the perimeter.

The variables have been selected in relation to the four sets of influences that comprise the components of aggregate health. The manner in which they influence and are determined by these components is shown in Figure 6.6 to 6.9 and explained in this section, together with a brief account of their significance and relationships. These variables can



#### 6.4.1.1. Demographic variables

Demographic variables are used in the study of groups in relation to their size, composition, and distribution. The variables that have been selected for examination are gender, ethnic group, age, education and marital status. They influence or are associated with those in the other categories, hence their position in the figure, and also operate at the individual, organisational, and community level. To illustrate this, it has been established that individual perceptions of health may be linked to gender, that ethnicity has often determined socio-economic status in line with the social environment of the organisation, other communities and the social system, and that occupational status is influenced by education. It is important to note that the education of members of an organisation should be analysed in terms of primary, secondary, post-secondary and tertiary education, and related to the educational requirements necessary for the performance of their work. Therefore, it will reflect the availability of opportunities in the wider community, within this organisation, and in previous employment. It is a fundamental determinant of status in the organisation, income and socio-economic status, as well as the ability to develop and make use of available resources.

The direct or indirect influence of these variables on the others is mentioned throughout the discussion that follows.

#### 6.4.1.2 Residential variables

These variables reflect the influences of the wider community on the health of the individual worker and his or her ability to work effectively, as well as the influences that he or she may bring into the organisation from the community. Similarly, negative health influences arising out of work can be ameliorated or potentiated by variables in this category. The variables provide information on the extent to which many of the basic health needs of individual workers are being met. When they are not, both individual and aggregate health is threatened. To a large extent, they pertain to the quality of the physical, chemical, biological and social environment. In addition, they can have a profound effect on the lifestyle of the individual and their susceptibility to certain health problems.

##### Area

Knowledge of the area where an individual resides can, along with other variables, indicate socio-economic status. It also provides information on his or her access to resources necessary for health and possible risks for health, such as living in an informal settlement which has no basic infrastructure of services and where violence is prevalent. Conversely, an individual who lives in an exclusive suburb is most unlikely to be at risk of developing health problems associated with poverty. The influence of proximity of residential area to workplace will also be discussed under transport. However, it is important to note that when people live near to industrial areas or the city centre they can be exposed to pollutants or an environment that is aesthetically displeasing.

### Accommodation

Ownership - Information on ownership together with the quality of the dwelling and the area it is situated in contributes to the assessment of socio-economic status. It can also be used as an indicator of social status and quality of life, taking into account the age of the individual, marital status, and political, and cultural factors. For example, migrant workers often do not own the dwelling in which they reside.

Type, construction, size and occupancy will indicate the adequacy of the dwelling in relation to basic health needs and yield information on the quality of life of the occupants. Residence in hostels, in particular, can have negative effects on the health of inhabitants.

### Basic services

Data pertaining to these variables enable an assessment of the adequacy of basic services for health and the identification of health hazards and, therefore, health needs. The hazards are principally associated with the biological environment. Additionally, they influence the quality of life of individuals and time available for leisure. For example, water supplies that are inadequate in terms of quality and quantity can entail considerable time and energy expenditure on fetching water, as well as affecting people's ability to avoid water-borne diseases. Dietary intake can be inadequate when individuals do not have access to inexpensive shops, food storage and food preparation facilities. An inefficient and/or expensive energy supply can also affect nutrition if people cannot afford to cook food, and it will influence their quality of life in numerous ways. Access to laundry facilities can have a direct



effect on workers who are exposed to potentially harmful substances. It can also contribute to infections, for example tinea pedis in workers who wear safety boots that cause sweating.

### Transport

Mode, cost and time - These variables will have implications for the individual insofar as convenience, safety, reliability, comfort and exposure to the elements is concerned. Reliance on an inadequate public transport system can be extremely time-consuming and frustrating, as well as expensive particularly if commuting takes place over long distances. Therefore, the area where the individual lives will have a bearing on these variables. When an individual spends a large proportion of his or her time commuting, it can affect their quality of life in terms of the amount of time available for other responsibilities such as marriage relationships, child rearing, and food purchasing and preparation, as well as leisure pursuits. Disproportionately large expenditure on transport reduces the money available for meeting other health needs. Access to lift clubs is an indication of an individual's social support. This is by no means an exhaustive discussion of the implications of transport for health, but it does demonstrate its importance.

### Social support

This refers to the people whom individuals can rely on to provide assistance and who lead them to feel that they are valued members of a social network. Family members and friends offer social support and are able to influence whether individuals perceive certain events as stressful and how they cope with them. Other social organisations, groups and people in communities are also able to give support depending on the nature

of the need and how well the individual is integrated into that community.

#### Economic factors

**Dependents** - The number of people who are financially dependent upon an individual can affect his or her physical, psychological and social health. For example, people who have a large number of dependents may find it difficult to meet their own and their dependents' health needs. This in turn can compromise their quality of life and result in anxiety and stress. Unhealthy coping patterns, such as excessive alcohol intake can affect their ability to maintain social relationships. Although large numbers of children may still be socially desirable for some people it is now extremely difficult for their parents to provide adequately for their dependents. Recently, these difficulties have been exacerbated by political and economic factors with high rates of unemployment and the worst drought this century. The migrant labour system and the breakdown of the traditional family system amongst many African ethnic groups have contributed to high rates of illegitimacy, with men often having a number of children by different partners who look to them for financial support. This can have serious implications for the health of all concerned.

**Cost of living** - This will obviously determine the availability of funds to meet basic health needs and influence quality of life depending on the individual's income. Workers will judge the adequacy of their earnings according to the cost of living and this can affect their perception of self-actualisation with regard to work and their performance of work. People often adjust their work output to correspond with their payment.

A number of variables may also be combined into composites to represent a construct. For example, an assessment of socio-economic status is based on a composite of variables that include education, income, occupational status and housing.

#### 6.4.1.3. Work variables

Variables pertaining to work demonstrate the significance of work for health status. These variables contribute to the formulation of a health profile for each worker. In addition they enable organisational characteristics and functioning to be assessed so that the occupational health nurse can determine the extent to which the organisation acts as a health strengthening field. It is especially important to determine the extent to which the social environment of the organisation promotes a healthy life-style.

#### Status

This sub-category refers to the status that the organisation formally accords the individual. This does not necessarily correspond to that individual's status in the eyes of colleagues, which would be indicated by the individual's power and social support in the organisation.

Occupational category - This is made according to the type of work performed and the nature of the appointment. Regarding the latter, the person may be employed full-time or part-time on a permanent or temporary basis, which has implications for their work security, remuneration, and conditions of service. The type of work is most commonly categorised as

professional, intermediate, skilled non-manual, skilled manual, semi-skilled, and unskilled (based on the U.K. Registrar General's classification, cited in Fitzpatrick & Scambler, 1984). It not only indicates the position of that individual in the organisational hierarchy but is also a well recognised dimension of social class and socio-economic status. However, difficulties in allocating some occupations to categories arise as a social value judgment may be required, and the nature of occupations changes so that categorisation is not fixed. In a large organisation, management positions are generally occupied by people who are categorised as professional, intermediate or skilled.

Income - This is usually determined by occupational and educational status, work experience, work performance, nature of the work, recognition in the organisation, cost of living and other economic factors in the community and wider society. Demographic variables also tend to influence the level of payment of workers. Therefore, an analysis of the remuneration of workers in an organisation can provide an insight into its social environment and functioning, as well as the ability of these workers to meet their basic health needs.

#### Work profile

Occupational history - Information on a person's occupational history is extremely important for identifying possible future health impairment or understanding past and present health problems due to occupational exposure to hazards. It also provides information on their social position and functioning, especially when periods in jobs, education, and experience are taken into account.

Nature of work - Information about the work activities that an individual is required to perform, together with that from other work variables, enables the nurse to establish the contribution of work to an individual's present and future health status to work. It is also used to establish organisational and socio-economic status.

Workload - It is also important to establish the workload of an individual to assess the effects of work on health status. Although this can be objectively determined, the worker's perceptions are extremely important and may differ from management's. Two dimensions should be considered, namely the quantitative and the qualitative load. Each of these can be rated, therefore the former could range between too much to do, a comfortable amount, or too little to do. Similarly, the latter would range between work that is too difficult to do, work that is comfortably within an individual's abilities, or too easy. These dimensions will occur in differing combinations. For example, a worker may experience a quantitative overload and a qualitative underload and feel unstimulated although he or she was busy. Obviously, aspects of an individual's work can vary in relation to these dimensions and at certain times (peaks). It is necessary to gain an overall impression of workload and the effects that it has on the individual. On a collective basis, this data can indicate many characteristics relating to the management and functioning of the organisation. Examples would include management's perceptions of workers' ability and the economic functioning of an organisation.

Hours - Data on the number hours an individual works is important to be able assess the impact of work on health. Conversely, it can also provide insight into the health of the individual and how well that individual is functioning. For example, people who have to fulfil work quotas and are not able to keep pace with other colleagues may need to work longer periods. Sometimes, colleagues will assist this person, which is a demonstration of the social support system. It is also necessary to identify when these hours are worked as this can affect other aspects of an individual's lifestyle. Night duty, for example, can influence the person's social interaction with family and friends. Workers who are employed at worksites far from inexpensive shops experience difficulty in maximising their income and this can adversely affect their ability to meet their basic health needs.

Peaks - In most organisations there are times when workload peaks, necessitating longer and more concentrated periods of work performance. The extent to which this occurs and the patterning of these peaks will also assist in establishing the interaction between health and work in an individual.

Moonlighting - When workers have more than one job, usually to augment their income, it can substantially influence their health and work performance. The degree to which this happens would be determined by the nature of the work, and the frequency and period over which it was conducted. It would be necessary to identify the reason for moonlighting to establish the health implications.

Job rotation - Certain work can be hazardous and in some organisations workers are rotated to reduce the



threat. Examples include exposure to hazardous chemicals, monotonous work, or work that requires great concentration. This practice can protect workers but it can also mask problems that would be better dealt with by changing work processes or products.

#### Organisational culture

Information from these variables facilitates the understanding of the social environment of the organisation and the identification of some of its important characteristics. They are able to exert a profound influence on individual and aggregate health, particularly with respect to individuals' perceptions of work and the workplace being stressful. An organisation where good interpersonal relationships predominate can be a health strengthening field, fostering work satisfaction and facilitating self-fulfilment of individuals.

The culture of an organisation refers to a shared set of beliefs about the way people should behave at work and the values pertaining to which tasks and goals are important (Kennedy, cited in Sadler, 1988). A fourfold typology can be used to describe the culture of the organisation. These types are the integrated bureaucracy, the mechanistic culture, the organic culture, and the anarchic culture (Sadler & Barry, and Handy, cited in Sadler, 1988). Different types of organisation require different cultures to function effectively, and therefore the appropriateness of the culture for the organisation under consideration must be evaluated with respect to its effects on individual and aggregate health.

The integrated bureaucracy is characterised by great emphasis on control, authority, rules, and

procedures. However, co-ordination of efforts to achieve the organisational goals is also important.

The mechanistic culture stresses control and authority, but also emphasises functional specialisation so that there is far less concern amongst members for the achievement of overall organisational goals. This type of culture seems more suited to stable environmental conditions in the organisation and wider community. In the organic culture, both individual discretion and autonomy, and teamwork to achieve overall goals are stressed. Therefore, mutual trust between different levels of workers is essential. Senior members must trust subordinates to make decisions in the best interests of the organisation, and lower level workers must be confident that they will be supported by their seniors when this decision-making involves risks. This culture appears to be effective when environmental conditions are undergoing rapid change.

The features of an anarchic culture are low control and low integration. This type of culture is required when work activities are highly creative or individualistic, such as in professional organisations like an architectural firm. In this case, the organisation exists to serve the individual, who is the central focus.

The management of an organisation both reflects and determines the organisational culture. The variables in this category can be used to identify the culture.

Type - This refers to the characteristics of the organisation based on the type of work performed,

product and size. The possibilities are numerous and could include light industry, heavy industry, an agricultural organisation, an educational institution, a health institution, a commercial organisation, or a small cottage industry. This information will assist in deciding whether the culture of an organisation is appropriate.

**Control** - The degree to which workers' behaviour is prescribed by a higher authority or left to their discretion is referred to as control (Sadler & Barry, cited in Sadler, 1988). They may be indicated by written work procedures and job descriptions, authority structures, control policies, and stipulated channels of communication. In a highly controlled organisation, procedures are standardised, formalised, and centralised, and hierarchical authority is emphasised. Where there is low control, procedures are decentralised, less formalised and less standardised, and discretion is encouraged.

**Integration** - This pertains to the extent to which there is co-ordination of activities to achieve organisational goals. High integration is characterised by high concern for overall objectives, good interdepartmental co-operation, and organisational structure based on projects or markets rather than functions. Conversely, low integration and high fragmentation is typified by emphasis on departmental objectives, poor interdepartmental co-operation, and structure based on functions.

**Communication** - This refers to the degree, direction, and quality of communication in an organisation. Communication between management and workers that is open, honest, unambiguous, ongoing, and

conveys the worth of members fosters good interpersonal relations in the work environment and encourages workers to identify with the organisation. In the organic and anarchic culture, vertical and lateral communication tends to occur more easily. The mechanistic and integrated bureaucracy cultures emphasise vertical communication along the chain of command, and rely heavily on written orders and instructions.

**Authority** - It is necessary to differentiate power and authority. The former is "the capacity to influence and is based on the resources available to the individual or the characteristics of the individual." There are a number of types of power and authority is defined as "the legitimate power granted to an individual by an organization", consequently it is acquired as a result of the position held (Strasen, 1987, p. 303) and not necessarily upon leadership qualities. Problems can arise when an individual is reluctant to exercise this authority or when other members of the organisation do not acknowledge this power. This can affect interpersonal relations and social health in the organisation, with consequences for social support, self-actualisation, safety and work satisfaction, amongst others.

**Responsibility** - This may be defined as being charged with the duty to carry out certain functions and tasks. The nature of the responsibility given to a members in an organisation can indicate management's perception of their ability and is related to the work required of them. It must be evaluated with respect to the authority of the individual. If an organisation does not grant adequate legitimate power to the individuals to perform these tasks and functions it can

affect their performance, work satisfaction, and become a source of stress. Individuals who believe that they are not given enough responsibility may feel frustrated, bored, and derive little satisfaction from their work.

#### Self-actualisation

These variables relate to the potential of work for self-actualisation and indicate the state of the social environment of the organisation. They can have a marked effect on work performance and worker attitudes towards management and the organisation. Therefore, when workers experience work satisfaction and perceive that their efforts are recognised, they are encouraged to attain their full potential in work performance (even when remuneration is lower than the workers desire) and negative influences from other factors such as workload and the nature of the work are ameliorated. Conversely, workers who do not experience work satisfaction and believe that their efforts are not recognised feel dissatisfied and can influence the social environment of the organisation negatively. Work satisfaction is greatly influenced by organisational culture.

Recognition may be tangible (privileges, promotion and/or payment) or intangible (praise). The recognition of work performance is dependent upon the criteria and methods of evaluation. Work satisfaction appears to be a stronger and longer lasting motivator than promotion. The system of promotion must be examined to establish whether it is perceived as fair, as this too can affect workers' attitudes towards their work and the organisation. For example, promotion on seniority alone and notability has been responsible for the loss of many good workers in organisations.



Development - An organisation that promotes the personal or professional development of its members indicates the value that it places on its human resources and fosters identification with the organisation and loyalty amongst its members. Opportunities for development can include those that enable a worker to perform better and advance in the organisation, if so desired, and those which enhance his or her functioning, such as cultural enrichment activities, literacy programmes, and preretirement programmes. Some of these activities may form part of the worksite health promotion programme.

#### Safety

This sub-category is concerned with work-related health hazards and the protection of health.

Hazards - A full health hazard appraisal of the organisation is necessary to be able to plan the protection of workers' health and to prevent health threats to the wider community. These hazards may be physical, chemical, biological, ergonomic/mechanical, social and psychological. The latter will be considered in relation to other variables such as management style and work profile. Health hazard evaluation can be problematic due to the proliferation of new chemicals and processes, difficulty in establishing safe standards, and the contribution of human biology factors such as the effects of age, gender, pregnancy, and poor health status.

Safety programme - This relates to the planning, implementation, and evaluation of a programme to protect members of the organisation whilst performing their work. The efficacy of the safety programme will



be determined by the extent to which it takes account of the health hazards present, the measures to control or remove these hazards, and the commitment and involvement of all the members of the organisation. The commitment of management to the programme is evident in their willingness to consider alternative materials and processes, observing safe standards, and the enforcement of the programme. Efforts to ensure that the workplace is hygienic are also basic to protecting worker's health.

Protective clothing - This is an important aspect of the safety programme. Information on the selection, provision, efficacy, and use of protective clothing is necessary to be able to protect workers' health and anticipate effects on health.

I.O.D.s - The number of injuries at work will indicate the safety of the work environment (including management practices and efficacy of the safety programme) and workers' behaviour, thus representing the environmental and lifestyle components of aggregate health.

#### Support

The degree of support provided for workers in the organisation can potentiate or ameliorate other negative influences arising out of work, health or residential variables.

Conditions of service - It is important to examine the conditions of service relating to vacation, sick and maternity leave, pension funds, medical insurance, housing subsidies, car allowances, contribution to an unemployment scheme, compensation for work-related health impairment, and other privileges, to assess the

potential of the organisation to act as a health strengthening field. Their availability to members of the organisation and use must also be investigated. For example, an individual who has a generous leave allowance but is unable to use it as there is an inadequate leave replacement system is at risk of becoming ill if this continues over a long period. Another common example occurs when unmarried women are ineligible for housing subsidies, which is a discriminatory practice. Temporary employees are usually not regarded to be eligible for many benefits. The use of sick leave will also indicate the health of the individual and the organisation.

Membership of a medical insurance is often also offered as a condition of service. These schemes involve a payment by both the employer and the employee so that the costs are met by the scheme, either fully or partially, in the event of the use of private health services. This is to ensure access to health care, and so reflects the organisation of health care in the wider community. Therefore, in countries that have a national health system, this type of insurance may be unnecessary. The rising costs of health care are making medical insurance schemes increasingly expensive for all concerned and some organisations and individual workers are keen to try other alternatives. These include comprehensive health care provision in the workplace or the use of health maintenance organisations. An analysis of medical insurance should focus on the costs to the employer and employees, the authority of management in the administration of the scheme, membership and rights to membership, satisfaction with the benefits, and abuse of the scheme.

Much can be learned about the characteristics and functioning of the organisation, and therefore its social environment by examining conditions of service.

Employee facilities - The facilities available to employees are also able to influence health and indicate the characteristics and functioning of the organisation. Economic constraints are frequently cited as the reason for not providing a comfortable and aesthetically pleasing work environment. Whilst there is truth in this it must be realised that an investment in such facilities is also an indication of the value of its human resources to the organisation, and it definitely does affect work performance. These facilities include the actual place where the work is performed, recreational facilities, eating facilities (including subsidised schemes), employee accommodation, child care, toilets and restrooms, and public telephones, depending on the needs of the workers and the real costs of providing these facilities. Regarding child care, it is well known that difficulties associated with finding adequate child care facilities are stressors for working mothers. Therefore, an organisation that provides such assistance is recognised as being supportive. It should be mentioned that the hygienic maintenance of all areas in the workplace is essential for worker's health.

Employee representative organisations - These organisations offer support for employees by representing their interests. This support can include interceding to settle disputes between individual workers and management, negotiating remuneration and conditions of service, and encouraging management to provide safe working conditions. An analysis of the

existence, power, membership, reasons for membership and the extent to which the members perceive that these bodies are able to achieve their aims will also contribute to the understanding of the social environment of the organisation and the influence of economic, legal and political factors from the community.

Health care - The provision of worksite health care is important for health promotion and protection. The nature of the care provided is determined by the needs of the workers and should concern on-the-job and off-the-job issues. These needs will be influenced by variables in the sub-categories of self-care and the organisation of health care. As the care must be acceptable to members of the organisation it requires their involvement. The importance of this is demonstrated in the need for first aid. This is care that is immediately available in an emergency to an injured or ill worker and can be instrumental in preventing disability and death. To be rapidly administered it should be rendered by workers where work is actually being performed. Thus, the training of first aiders is an essential part of the health care and the safety programme. Additionally, management must be committed to the provision of such a programme so that funding is available and workers are able to use it without fear of negative pressure from first level management. This can happen if it is perceived as interfering with production. It is extremely important that the health professionals provide a service that is seen as impartial.

Social support - This concerns the relationships between the members of an organisation. It can indicate the social environment of the organisation and

the extent to which an individual feels and is valued and can rely on work colleagues and other members or departments for assistance (such as the Personnel department). Social support in an organisation can mediate potentially negative health influences.

Job security - Job insecurity can be perceived as a potent stressor, depending upon the degree of reliance upon the income from the job. However, it is recognised that some insecurity is not altogether a negative factor as it will influence work performance. This is more evident in organisations in the private sector where workers are soon discharged if their work performance is unsatisfactory. Sometimes it is extremely difficult to terminate the services of employees in public organisations, even when their work performance is very poor. This can adversely affect the functioning of the organisation and be frustrating for other workers. An analysis of these factors will provide information on the social environment of the organisation.

#### 6.4.1.4. Health variables

Health-related variables will affect the health and illness behaviour of people and subsequent health outcomes. They are influenced by individual and aggregate factors. For example, the health beliefs of an individual are shaped by the social environment of the organisation and other communities to which he or she belongs. Health care utilisation is determined in part by what is provided at organisational and community level.

##### Beliefs

Concept of health - The manner in which

individuals conceptualise health will determine their health and illness behaviour. It appears that demographic variables such as ethnicity, gender and level of education as well as group norms are able to influence this conceptualisation. For example, people who are better educated will tend to perceive health as a state of equilibrium or as a prerequisite for self-actualisation (eudaimonistic definition) and expect that the care they receive will reflect this. Less well educated people regard health as the absence of disease and the ability to function, particularly at work, and define health care as curative care rather than promotive and preventive care.

Locus of control - This pertains to individuals' beliefs about whether they are able to influence their health by their actions, which will determine their readiness to engage in health preventive and promotive behaviour. People of a lower socio-economic status (including lower educational status) tend to believe that they are not able to influence their health and changes are largely due to circumstances beyond their control (external as opposed to an internal locus of control). This is hardly surprising as people of this status often do not have equal access to the basic requisites for health. However, they frequently compound the situation by indulging in harmful practices such as smoking and excessive alcohol consumption and are not able or prepared to accept that they could be influencing their health negatively. Similarly, people with this perspective may be less easily motivated to follow safety practices at work. Whilst the link between socio-economic status and an external locus of control may have been suggested as a general trend it does not mean that this perspective is confined to people of lower socio-economic status.



Therefore, these aspects must be analysed on an individual and aggregate basis to establish broad trends and individual differences, and be taken into account when planning health promotion activities.

### History

Inherited - This pertains to the inherited predisposition to develop diseases, whether or not they have actually presented or not, and reflects the human biology component of aggregate health. Together with lifestyle and environmental factors they can influence future health status. In the work environment this can be important when certain chemicals are used or where a group of people who collectively have a tendency to develop a condition form part of the workforce. An example of the latter would be people of Indian origin who seem to have a higher incidence of diabetes than other groups that lifestyle cannot account for alone. In some organisations, where there has been little turnover of employees, the average age of the workforce rises and the incidence of inherited conditions tends to also rise.

Illness and injury - Data concerning the previous history of illness and injury can contribute to an understanding of environmental factors and lifestyle and enable some prediction of future health status. This will facilitate planning to meet health needs so that health risks at work and home may be minimised.

Hospitalisation - Information about these episodes also contributes to the points mentioned in connection with illness and injury, as well as providing an indication of the severity of these events and the use of the health care system.

Sickness absence - Absence from work due to sickness is influenced by variables from all four categories. Details about absence from work due to illness or injury facilitate an understanding of the severity of these occurrences. Additionally, it can provide an insight into the congruence of the individual's perceptions of illness with those of health professionals when it is established whether this absence was condoned by the latter. It can also indicate the effects of inadequate basic services in the wider community, family influences on the worker, the management style in the organisation, working conditions, job satisfaction, health care provision, and so forth. Consequently, sickness absence is influenced by the subjective and objective dimensions of health. An assessment of the use of illness for secondary gain may also be made. Sickness absence can indicate level of performance with regard to number of days of disability due to illness or injury.

#### Current status

Subjective status - This variable relates to the individual's perceptions of his or her health status and level of performance, and can relate to physical, psychological, and social health.

Objective status - Objective measures of health are used by the health professional to assess health status, such as pulse, respiration, temperature, blood pressure, mass, together with more sophisticated measures of the functioning of the various systems and detection of work-related health impairment. Some measures of psychological functioning can also be used.

Longstanding illness or disability - This data provides information on chronic conditions that can

affect quality of life, future health status, and the need for surveillance, protection from certain hazards, treatment, and rehabilitation. The degree to which it represents a problem for the individual can be a reflection of the quality of the environment, especially the social environment. It must be remembered that although the person may have a chronic condition it need not prevent them from manifesting aspects of health.

Work-related health problems - A knowledge of health problems that have occurred as a result of the performance of work, both from the perception of the client and the nurse, are important in preventing further illness or disability.

Medication - Information on currently prescribed medication is required to monitor a client's health, assist with compliance, and prevent illness or injury. Examples of the latter are iatrogenic conditions, where certain medications may slow a person's reactions. This would be inadvisable if they worked near moving machinery, or exposure to chemicals which may interact with medication. Additionally, variables such as age and living conditions can influence medication, as is found with insulin-dependent diabetics who do not have satisfactory home conditions to store and administer the insulin.

#### Self-care

Perceptions of susceptibility - An individual's perception of susceptibility will reflect their understanding of certain conditions as well as their concept of health and illness and locus of control, and will determine their health education needs. This understanding is influenced by individual and social

factors. For example, if they believe that some conditions are the result of bewitchment they may be less likely to follow the care suggested by health professionals. This emphasises that the greater the social distance between the health care provider and the consumer the less likely it is that there will be empathy and understanding between them. It also shows the importance of involving community members in health care programmes. In the case of the workplace, this would require the active participation of workers in designing, organising and implementing the programme if it is to be successful. Perceptions of susceptibility will also affect health and illness behaviour, the former pertaining to lifestyle.

Self-diagnosis - The evaluation of symptoms by individuals is governed by their understanding of illness causation in general and specific conditions. Again, it will influence the action they take to remedy the situation. Where this understanding is not congruent with that of health professionals the person will not recognise symptoms as a threat to health. Attention to symptoms can be influenced by a number of factors. These include stress and anxiety regarding health status, the time they have been present, the effect they have on performance, the significance attached to them (for example fear of a diagnosis of malignancy can make a person deny the presence of symptoms), gender, and other factors that can lead to 'containment', such as being extremely busy or involved in work which is satisfying.

Use of alternative health care practitioners - This will also be determined by the individual's frame of reference of health and illness causation, together with the extent to which they believe that these

practitioners are able to assist with the problem. Consequently, use of these practitioners may be symptomatic of dissatisfaction with the health care system and health professionals. Information is required about the type of alternative care used in relation to the nature of the health problem and the reasons for this consultation. The lay referral system and self referral may promote the use of these practitioners.

Use of health care professionals - Information is elicited regarding the category of professional consulted in relation to the pattern of usage. This would include details of the type of problem, frequency and reasons for consultation. Knowledge of the services available will also influence use as will membership of a medical aid scheme.

Self-treatment - Information is obtained about the forms of treatment used, and can include treatment that the client decided to use without consultation of a health care practitioner, that which was recommended by other lay people, and that prescribed by health care practitioners. Therefore, compliance is embraced under self-treatment. It is an important aspect to be assessed as the participation of the client in treatment is essential for efficacy.

Health-risk profile - This is an assessment of promotive, preventive and maintenance health behaviour, and together with other variables can indicate future health outcomes. Some of the data collected under current health status also pertains to the health-risk profile. Such information is essential for planning health programmes in the workplace.

### Organisation of the health care system

Structure - This relates to the manner in which health care is provided and financed, as well as its efficiency. For example, a national health system as opposed to a combination of health care provided by the public and private sector. It is extremely important as it will determine a number of the factors in this category. It will also affect the nature of the health care that must be provided in the workplace.

Range of services - An understanding of the range of services provided is necessary to assess utilisation, efficacy, availability of what is desired, acceptability and cost of the system.

Personnel - The proportion and number of personnel is important to establish cost-effectiveness and utilisation. Their education and training may need to be taken into consideration as it has a direct bearing on their ability to meet clients' health needs. In particular, a greater understanding of the inter-relationship between work and health and an aggregate perspective is required.

Availability of resources - The ability of health care providers to function is obviously influenced by their access to appropriate resources, such as essential drugs, vaccines, buildings and equipment. The emphasis on appropriateness in view of the danger of spending large amounts of money on sophisticated technology.

Acceptability - An assessment of the clients' perceptions of the acceptability of a service is extremely important as it will determine its utilisation and efficacy. Factors to be considered



include the behaviour of the personnel towards clients and the actions which the client is advised to carry out. The more that clients are involved in planning and implementing this care the greater the chances of compliance, satisfaction and success.

Accessibility - It is extremely important to assess whether services are accessible in terms of convenience (distance, hours of operation and waiting time) and cost as this will influence their utilisation profoundly. Many workers delay seeking assistance because they cannot afford time away from work, unfortunately often with disastrous results. Use of preventive care services is particularly affected by these factors, thus making it an essential feature of worksite health promotion programmes. The acceptability of the cost of health care will be influenced by the cost of living and an individual's income as well as other economic factors.

#### The lay referral system

It is important to recognise the role of the lay referral system in determining the procurement of assistance from health care practitioners. The components of this system are incorporated in the variables selected for the assessment of aggregate health status. They comprise the social support in the residential community, the social support in the workplace, and the self-referral made by the client. The extent to which referral to professional health care providers occurs will be determined by the degree of congruence between the lay and medical conceptualisation of health and illness, knowledge of the health services, and the quality, acceptability and accessibility of the services provided.

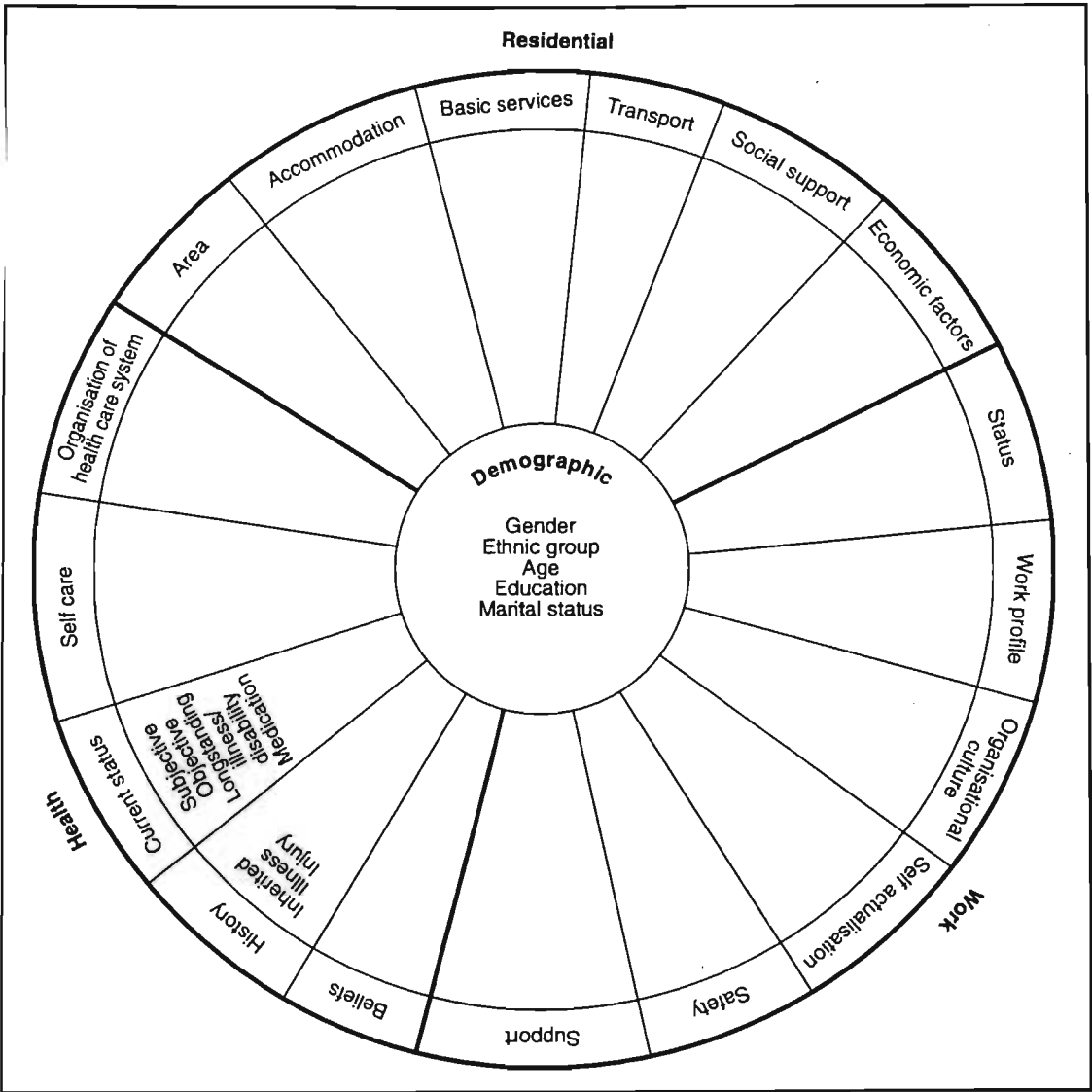


Figure 6.6: Variables that influence and are determined by the human biology component of aggregate health

Individual factors can mediate the strength of these factors, depending on how cohesive the lay referral structure is. For example, if it is loosely organised and an individual does not accept the recommendations, the outcome will not be too uncomfortable for that individual. It also depends on the nature of the health problem. An example of this is the assistance by a male doctor with childbirth, which may be quite unacceptable in some cultures.

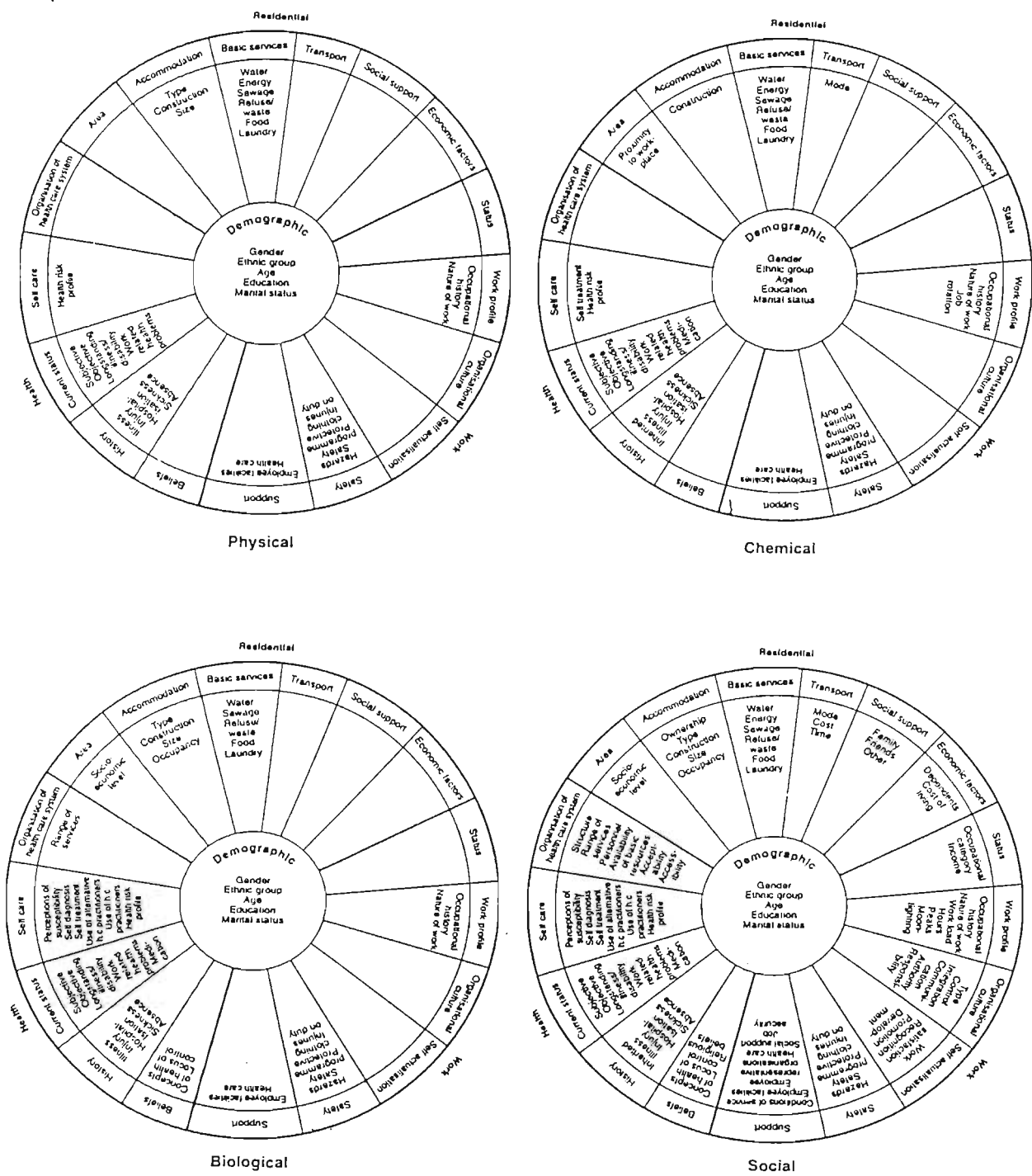


Figure 6.7: Variables that influence and are determined by the environment component of aggregate health

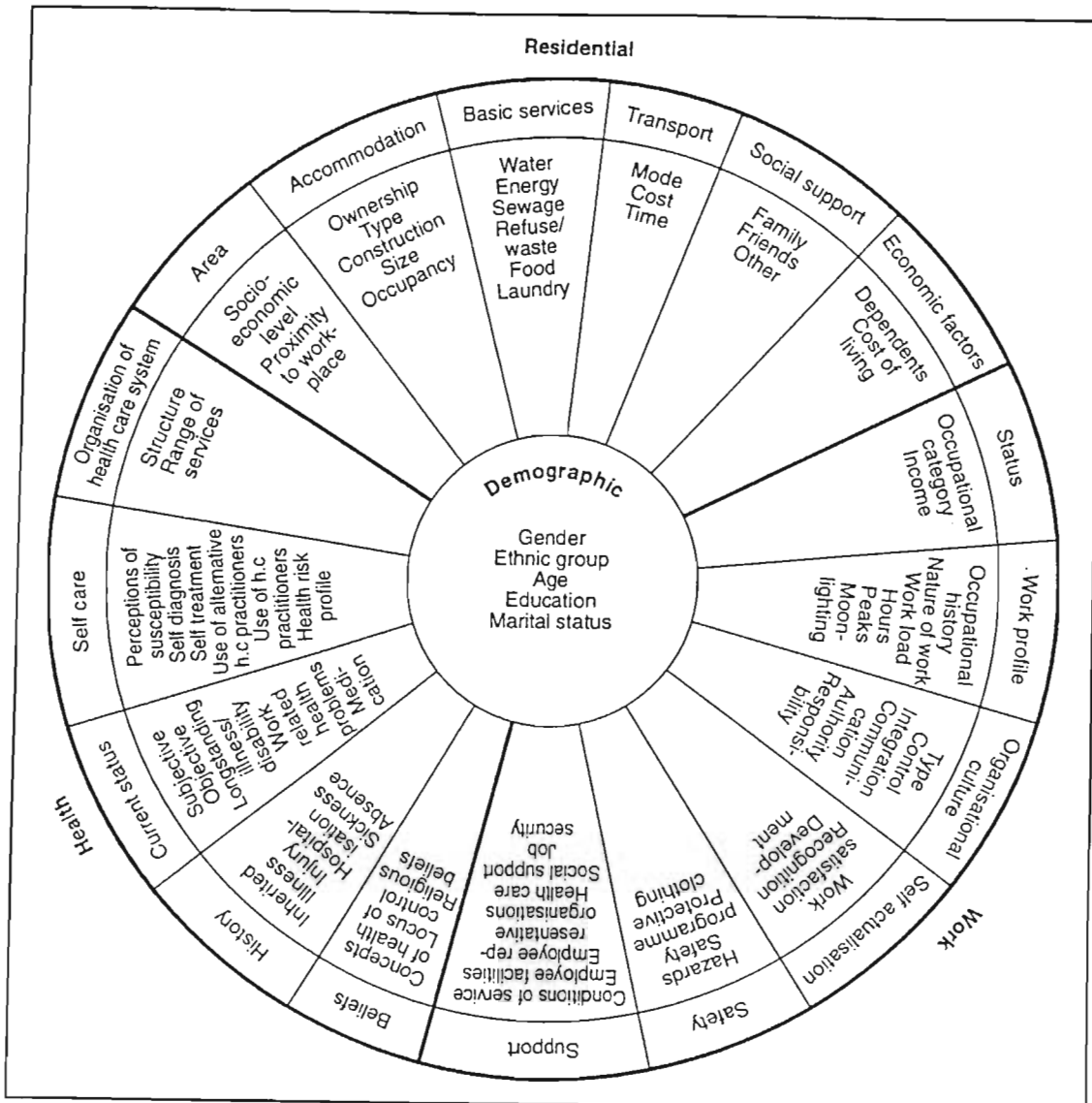


Figure 6.8: Variables that influence and are determined by the lifestyle component of aggregate health

#### Future health status

Future health status is accommodated under health risk. It will be assessed for individuals by combining data from health beliefs, health history, current health status, self-care, exposure to hazards at work and at home, and access to the resources essential for health.

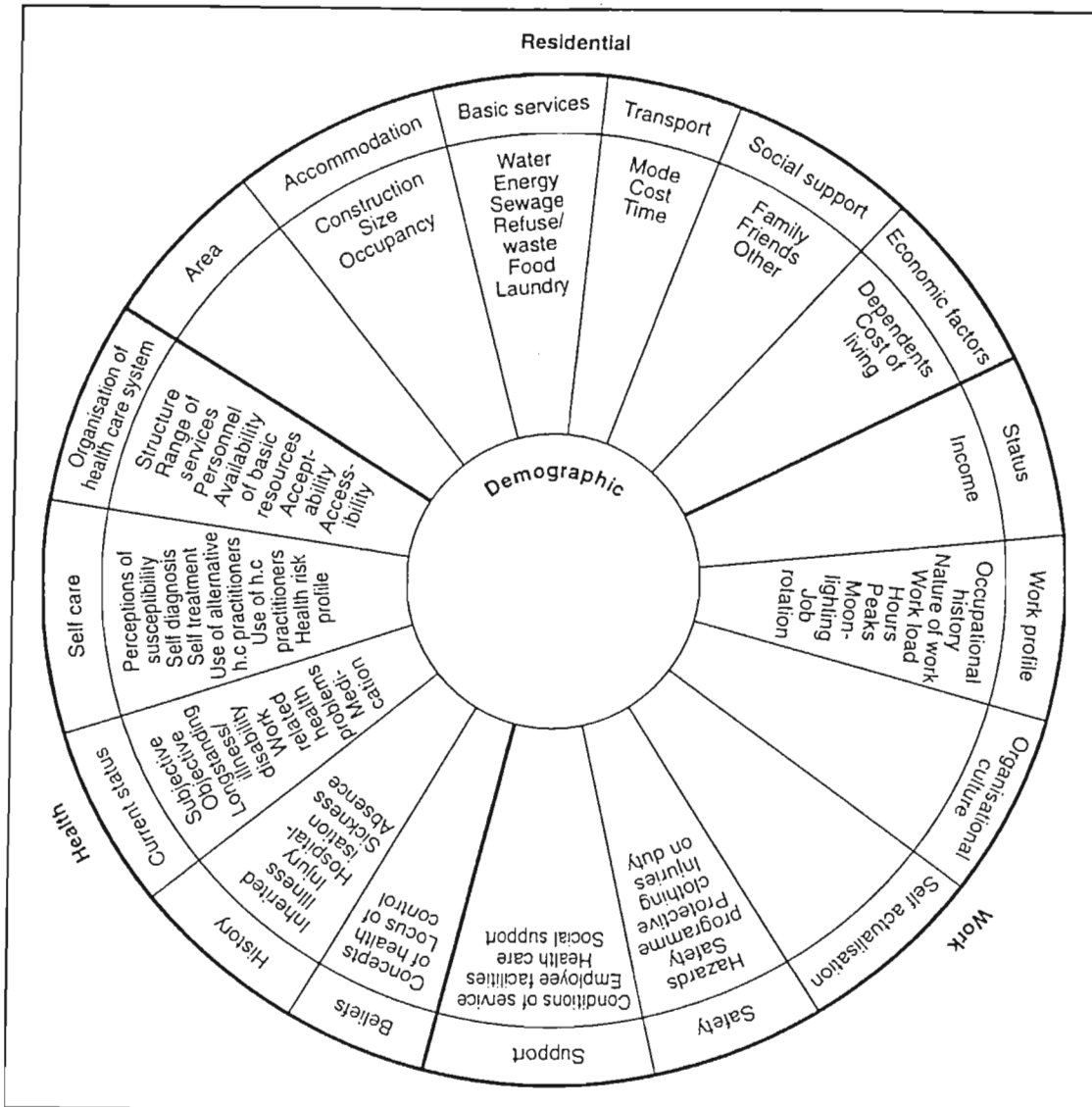


Figure 6.9: Variables that influence and are determined by the health organisation component of aggregate health

### The dimensions of health

These are incorporated in the categories of variables. For example, health beliefs, work satisfaction and emotional support are all subjective perceptions. Physical health indicators such as blood pressure and pulse are objective dimensions. Health hazards can affect physical and psychological health,

whilst the social support system at work and the in the community contribute to social health. Social health can be assessed by the nurse according to a combination of other variables, for example the degree of social support available to the person, performance of social roles, interaction with other members of the group and their perceptions of the person. On an aggregate level, an assessment would be made of group functioning that would be indicated by the prevalence of alcohol and substance abuse, conflict (remembering that some conflict is healthy and that it is the way it is manifest and handled that can be unhealthy) and group cohesion.

#### 6.4.2 The strategy for measuring aggregate health status

The strategy for measuring aggregate health, based on the model, consists of two phases. The first involves the use of a number of methods to collect data pertaining to the selected variables described in 6.4.1. The second phase comprises an analysis of the form, prevalence, distribution, and relationships between the variables. A description of the use of the strategy for an initial analysis of an organisation will follow. Regular reappraisals would need to be undertaken thereafter, to ensure that the occupational health programme remained sensitive and responsive to changes in aggregate health status.

##### 6.4.2.1 Data collection

The co-operation of all levels of the organisation is necessary for the successful implementation of the strategy. This may not be forthcoming initially, depending on the perceptions of management and workers



regarding the occupational health nurse and her objectives for collecting the information. It could take time for her to earn their trust and respect, so that they are willing to impart confidential or personal information to her. Therefore it is imperative that she demonstrates her impartiality, ensures that confidentiality is maintained, and protects the rights of individuals who participate in the assessment.

The data will be obtained by means of:

(a) An examination of records and interviews to collect information pertaining to the following aspects, that will enable a broad profile of the organisation to be established, and so serve as a guide for the rest of the data collection phase.

- \* function and type of organisation, indicated by end products or services;
- \* departments, sections and worksites;
- \* organisational chart;
- \* post establishment;
- \* salary and wage structure;
- \* total number of employees;
- \* distribution of employees according to
  - department, section or worksite
  - occupational category
  - appointment (permanent, temporary, full-time, part-time)
  - age
  - gender
  - ethnicity
  - education
  - marital status
  - number of dependents

- \* employee turnover rates;
- \* absenteeism;
- \* sickness absence;
- \* illness and injury rates;
- \* mortality rates;
- \* early retirement due to illness
- \* medical insurance scheme membership;
- \* cost analysis of illness and injury for the organisation.

Some of this information may not be available and should be determined once all the data in the first phase has been collected.

(b) A survey of a stratified random sample of members of the organisation. The size of the sample will be determined by the number of members in the organisation. A survey is appropriate as it is suited to "describing characteristics, opinions, attitudes, or behaviours as they currently exist in the population" (Wilson, 1989, p. 145) and will yield both qualitative and quantitative data. It should effect a balance between being statistically representative and realistic in terms of resources (time, cost, access, and personnel) to conduct the survey. The sample should be stratified to represent the various sectors and levels of the organisation. Therefore, management and lower level workers will be included.

(c) A survey of all sections, departments, and worksites to identify threats to the health of workers and the community. This will include physical, chemical, biological, ergonomic, and psycho-social hazards. The assistance of specialised personnel, such as occupational hygienists, may be necessary in some organisations. The data will be obtained through the

use of direct observation, the interview technique, specialised measurement techniques (noise levels, dust counts, and temperatures, for example), and written procedures and records. Particular attention should be given to the measures used to control or remove hazards, the use and maintenance of protective clothing, and the nature of the social interaction between members in each area. Positive features of the environment that serve to strengthen health should also be noted. Assessment of waste disposal, water supply and energy, insofar as their potential for affecting health in and outside the organisation is necessary.

(d) The identification and analysis of existing policies, procedures, programmes, and facilities that affect individual and aggregate health. This would include:

- \* management structures, especially regarding decision-making, authority and control;
- \* policy regarding channels of communication, methods of communication (verbal or written);
- \* policies relating to the control or discipline of employees, for example probationary periods, performance reports and warnings;
- \* employee representative organisations and grievance procedures;
- \* employee recruitment, appointment, placement, promotion, discharge, and retirement policies;
- \* conditions of service relating to vacation, sick and maternity leave, housing and car allowances, pension scheme, contributions to an unemployment insurance scheme, compensation for work-related health impairment, and other privileges;
- \* employee development programmes;
- \* work allocation according to organisational

- chart, work procedures and job description;
- \* policies for the evaluation of work performance;
  - \* work incentive policy;
  - \* health care provided in the workplace;
  - \* medical insurance scheme;
  - \* safety programme;
  - \* hygiene programme;
  - \* provision of subsidised meals or feeding schemes;
  - \* accommodation provided for employees in the workplace;
  - \* child care facilities;
  - \* recreational facilities;
  - \* toilets, wash basins, and restrooms; and
  - \* basic services supplied - water, energy, solid and liquid waste removal.

Information regarding these policies, procedures, programmes and facilities would be obtained from documents, interviews with key informants, attendance of committee and general meetings of the various groups, and through direct observation. The key informants may be members of upper, middle, and first level management, members of employee representative organisations, or part of the informal power structure so that their opinions are valued by group members.

(e) An assessment of the provision of health care in the wider community, to establish the adequacy of health care provision in the organisation. A brief profile of the community in which the organisation is situated should also be conducted, to identify the general influences such as the basic services and social services that the organisation can draw upon, as well as the potential influences of the organisation on that community.

#### 6.4.2.2 Occupational health diagnosis

The data would then be examined to produce:

(a) a profile for each individual worker who was interviewed, identifying their specific characteristics and inconsistencies, in relation to the aggregate profile; and

(b) a broad profile of aggregate health with common trends established. This would be derived from the aggregation of data collected by the six methods outlined in 6.4.2.1. The form, prevalence and relationships between the variables from the model would be analysed to yield an occupational health diagnosis indicating the health status of the organisation and the health needs. An occupational health programme would then be planned and implemented according to this statement.

### 6.5 Conclusion

This chapter has described the construction of a model of aggregate health in the workplace, based on a conceptual framework. The conceptual framework incorporates the four points described in 2.6, that were agreed upon following the 1988 meeting in Finland to discuss conceptual frameworks in occupational nursing (cited in Rossi & Heikkinen, 1990).

A strategy for the measurement of aggregate health has been developed from the conceptual framework, to plan and implement an effective occupational programme, that takes account of the health needs of individuals and the organisation as a whole.

## **CHAPTER SEVEN: RESEARCH METHODOLOGY**

This chapter deals with the research methodology and is divided into three main sections. In the first, the research design will be outlined. The second section marks the beginning of the second phase of the research. A detailed account of the development of the survey instrument will be given in it. The last section will describe the planning and implementation of the instrument's field test, which is the seventh research objective.

### **7.1 The research design**

Burns & Grove (1987) state that the conceptual framework and the research design framework must be compatible and complementary, each providing logical connections that intertwine throughout the study, so that all the components merge into a meaningful whole. They direct the process of the study and provide the context for the interpretation of the findings. For this study, the relationship is so important that the development of the conceptual framework forms a major part of the research process and is therefore included in the research design, as will be explained hereafter.



The relationship between these frameworks has already been demonstrated in Chapter Six, where it had to be decided whether the model of health would be a comprehensive one or a holistic one before the conceptual framework could be constructed. This was a critical decision because it would determine the way in which health status and needs would be assessed, and this in turn would influence the research design. Therefore, the resolution to develop a comprehensive model implied that a logistic mode of reasoning would be used, that would consequently entail the use of a quantitative research approach.

This research is concerned with the development of a tool for answering a nursing question and so it is essentially a methodological or instrumental study. In this case, the question is how aggregate health in an organisation can be measured in order to identify health needs and plan an effective occupational health programme. The research objectives devised in Chapter One to answer this question will therefore form the basis of the research design. Table 7.1 relates these objectives to the steps in the process of developing a tool, as summarised by Wilson (1989, p. 344), thereby demonstrating that the research design is appropriate for a methodological study. However, it should be realised that this study is rather complicated as it is also concerned with the formulation and testing of a conceptual framework and model. Furthermore, the tool is part of an overall strategy for measuring aggregate health.

Table 7.1: The incorporation of the steps in the development of an instrument in the research design

Steps in instrument development*	Research design	Phase
1. Delineate the content area	Identify concepts of health Develop the conceptual framework using these concepts Construct a model of aggregate health status in an organisation based on the conceptual framework	One: Literature review
2. Identify the various dimensions of the content area that need to be measured	Investigate the approaches and methods used for health assessment Operationalise the concepts in the model into composites of variables for measurement Devise a strategy, based on the model and using the selected variables for the determination of aggregate health status in an organisation	
3. Search the literature and draw upon the professional expertise of colleagues/others to generate item stems 4. Determine the types of questions to be asked 5. Develop each item (question/statement) to convey one idea, and aim for brevity and clarity 6. Decide on the response format best suited to obtain the type of data needed	Using the preceding information from the objectives, develop a survey instrument as part of the strategy, for use in a real organisation	Two: Development of the survey instrument
7. Select a panel of experts to critique the instrument	Carry out a pilot study and revise the instrument accordingly	
8. Refine the instrument and begin testing for reliability and validity	Conduct the survey Analyse the data to: 1. establish the aggregate health status of the organisation 2. test the reliability and validity of the instrument 3. evaluate the model and strategy	
9. Refine the instrument again if necessary and repeat tests for reliability and validity	Refine or revise the model, strategy, and instrument based on the analysis of the survey data	

\* According to Wilson, 1989, p.344

The research design can be divided into two phases. The initial phase involved an extensive literature review to meet the first six research objectives, culminating in the suggested strategy for the measurement of aggregate health in an organisation. The content area needing to be measured was clearly delineated and described, including the establishment of the different dimensions of the construct. From this, variables that represented the construct were identified to permit measurement. Chapters Two to Six dealt with the first phase of the research.

The second phase of the research will be covered in Chapters Seven to Nine. It entails the development of a survey instrument that will be then be used in a specific organisation, in order to evaluate and refine the model, strategy, and instrument and so comply with the remaining research objectives. Items for the instrument will be constructed from the selected variables identified in Phase One. The importance of this process should not be underestimated in a study of this nature, as it is necessary for the establishment of construct validity.

Although the survey instrument is only one part of the strategy for the measurement of aggregate health status, it is arguably the most important and complicated component to be developed and tested. Unlike the other components, the survey must include the collection and analysis of data pertaining to virtually all the selected variables. In contrast, the execution of the other parts, which are adjuncts to the survey, is more simple. Furthermore, it is because the survey incorporates an analysis of all the variables that its results may be used to refine, modify, and

substantiate the model and the strategy.

## 7.2 The development of the survey instrument

The survey instrument is intended for use in conducting a sample survey as opposed to a census, due to the depth and scope of the data to be elicited. It will have the features of both a descriptive and a correlational survey, as it will be concerned with determining the prevalence, extent, and distribution, as well as the direction and magnitude of relationships between the selected variables.

The decision to design a survey instrument was governed by the research question, the target population (members of an organisation) and the setting for the study (the workplace). Amongst others, the advantages of a survey for establishing health status are its flexibility and broadness of scope, and that it permits the collection of a large amount of data from many subjects in a relatively short time, at minimal cost. This is ideal considering the number of variables to be examined in determining aggregate health. Furthermore, the data is derived from self-reports, which is important for this study as it seeks to examine the subjective dimension of health.

There are a number of possible disadvantages to the survey approach, all of which will be taken into account when designing the instrument and conducting the field test. The impersonal approach that is often inherent in surveys can result in a low response rate. If questions are ambiguous, confusing, or irrelevant they yield meaningless data. Respondents tend to only offer the information that they are willing to reveal.

Difficulties may be experienced in storing and keeping track of the large quantities of data generated by a survey. Data tend to be superficial. Lastly, survey questions only enable associations between variables to be studied, and not cause and effect. (Polit & Hungler, 1985; Thomas, 1990; Treece & Treece, 1986; Wilson, 1989.)

#### 7.2.1 Selection of data collection methods

A combination of data collection methods will be incorporated in the instrument. This is important as a common weakness in instrument design is the use of only one method of data collection to measure a complex construct when multiple indicators are required (Wilson, 1989).

One of the methods to be used will be self-reports, that will be elicited by means of a questionnaire and an interview in order to gather information about the members of the population. Self-reports are appropriate for the establishment of aggregate health status as it is necessary to understand how the members of the organisation "think, feel, believe, or behave [and] the most direct means of gathering the information is to ask them" (Polit & Hungler, 1985, p. 182). It is also possible to collect retrospective data with regard to previous activities and events, as well as plans for the future and anticipated events.

Such information is difficult to obtain by other means. Criticisms of self-reports stem from the fact that the data can be subjective and not represent the true situation. However, the importance of participants' perceptions regarding health has been

well established in Phase One of this study and therefore this is not a disadvantage in all respects. An example would be the need to obtain an accurate assessment of lifestyle. The validity and accuracy of self-reports may also be questioned as it is known that these reports may not in fact reflect their thoughts, feelings, beliefs, or behaviour. This can occur because they think that the researcher, or other people who have access to the findings, could disapprove of them. (It must be noted that in this section reference to the researcher includes either the researcher who will conduct the field test or the occupational nurse using the instrument to assess aggregate health status.) It is possible to overcome this weakness to some extent by building checks into the instrument, using other methods of data collection to substantiate their answers, and establishing a relationship of trust with the subject by assuring them of respect for confidentiality and conveying a non-judgemental attitude. All of these measures will be used in designing the instrument and conducting the field test. In particular, efforts will be made to inform participants of the protection of their rights and establish such a relationship (7.3.5.1 and 7.3.9), whilst employee representative organisations will be involved to reassure them that the information imparted will not be used to their detriment, thereby encouraging them to be more truthful.

Physiological and biophysical measures will also be used to gather data for the survey. These will be augmented with observation, palpation, and auscultation techniques. The measures to be made are height, weight, pulse, respiration, and blood pressure. They are simple measures, that require inexpensive and readily available equipment, are noninvasive, do not



entail specialised training for the user, and yield interval and ratio-level data. Care will be taken to control for errors that can occur in making these measures. Sources of such error may result from the environment in which they are conducted, the influence of the user, the subject, the machine, the technique, and interpretation (Thomas, 1990).

The advantages cited for physiological and biophysical measures include their objectivity, sensitivity, and precision (LoBiondo-Wood & Haber, 1990; Polit & Hungler, 1985). Therefore, provided that there is no equipment malfunction and the correct technique is used, two people should be able to obtain the same results when measuring an individual. Usually, respondents will not be able to deliberately distort readings, although their psychological state can do so. For example, anxiety can influence pulse, respiration, and blood pressure. As the machine or device is designed to measure the intended variable it is likely to be precise and sensitive. For this instrument, the respondent's pulse and respiration will be measured using the stop watch function on a digital watch, height will be measured with a tape measure, weight with a bathroom scale, and blood pressure with a sphygmomanometer. The latter two will have been correctly calibrated. All of these are considered sufficiently sensitive and precise for this study.

In some cases, these measures will provide a means to validate the data obtained from self-reports. For example, a respondent who is having inadequate exercise and sleep, is working long hours, and consuming large quantities of alcohol and caffeine may be expected to have physiological signs of stress such as a raised blood pressure.

The instrument will be divided into a self-administered questionnaire and a structured personal interview for a number of reasons. Principally, this relates to the large amount of data required to be collected from each participant which would make it far too time consuming to gather in just one interview. Subjects could experience fatigue or boredom, which may affect the validity of their responses. Consequently, the questions will be allocated on the basis of the strengths, adequacy, and efficiency of each method.

The questionnaire is a useful data collection method as it is quicker and less costly for the researcher than an interview. However, it tends to produce more superficial answers, and any questions that are misleading or unclear are not well answered. Therefore, the questionnaire will contain items that the respondent should be able to answer on his or her own and that may be answered more truthfully when they are done in private. Examples are questions relating to work supervision, satisfaction and communication.

The main strength of the personal interview lies in the depth and quality of the data that it yields. It is more flexible than other methods and allows the use of interpersonal skills to increase co-operation and obtain additional information. Therefore, whilst it will be a structured interview it will not be so tightly controlled that further explanation or rewording of questions by the researcher is precluded. In addition, some questions will be open-ended. Consequently, the interview will contain items that may require the assistance of the researcher or need some explanation or further questioning, such as those referring to symptoms, the work hazards, and health

history and perceptions. In the main, questions designed to elicit qualitative and more complex data will also be included in the interview. As these take the form of open-ended questions, respondents are likely to answer in more detail when the researcher is present to record them rather than if they have to write a lengthy reply. However, a few will appear in the questionnaire and be followed up in the interview. Questions that could entail some health education, depending on the responses, will also be reserved for the interview. Finally, certain sensitive questions relating to health conditions and behaviour will be posed towards the end of the interview in the hope that a rapport will have been developed with the subject, who may then answer more truthfully than in an impersonal questionnaire. The physiological and biophysical measurements will also be made at the end of the interview, when the respondent is more likely to be relaxed and the readings should be more accurate.

Other benefits will ensue from the use of an interview. Primarily, it will provide an opportunity to gain further information through observing the participants as they are answering the questions. This will facilitate an assessment of their level of understanding and co-operation, their social class, lifestyle, manner of interacting and communicating, and physical and mental state. In addition, it will be used to detect ambiguous and misleading questions in both the interview and the questionnaire, so that they can be clarified for the subject and improved when the instrument is refined. The presence of the researcher will improve control over the data collection in that there will be some assurance that the questions have been answered by the subject and not another party, except in cases where an interpreter is used to assist.

### 7.2.2 Description of the instrument

The survey instrument is designed to elicit quantitative and qualitative data on the variables to be investigated in the sample (see Anexures 5 and 6). As stated, it consists of a questionnaire and an interview schedule, each of which are further divided into five subsections relating to biographic and demographic data, non-occupational data, occupationally associated data, a general health profile, and a health risk profile. The questions aim to gather factual information about the respondents, their attitudes and feelings about topics, and some judgements of the way they perceive or experience events. Therefore, both objective and subjective data will be collected as demanded by the model of aggregate health.

#### 7.2.2.1 Principles observed in devising the instrument

The quality of this type of instrument as a measuring tool may be affected by a variety of factors, besides those related to the data collection methods that have already been mentioned. Consequently, a number of principles have been observed in devising it. These are outlined below.

Question wording - Questions have been formulated to ensure clarity, sensitivity to the respondent's psychological state, appropriateness to reading levels (although the questionnaire will be incorporated into the interview for illiterate respondents and an interpreter used if necessary), and freedom from researcher' bias. In particular, efforts have been made to avoid social desirability response bias as a result of wording. Furthermore, care was taken in wording the

questions so that they were not offensive or impolite. For example, categories were used for respondents' ages instead of the actual number of years. Income, although extremely important was not included and will be derived from organisational salary scales according to occupational category and rank.

Where necessary, definitions will be given to clarify questions. For example, a person is defined as a financial dependent in the event that the respondent makes "a financial contribution at least every two months towards a person's living costs". Additional concepts will be defined by the researcher during the interview, such as the difference between authority and responsibility. Explanations of such definitions will be given in Schedule One.

Response items for structured questions aim to encompass significant alternatives, that are mutually exclusive. Therefore, although there are a few questions that have dichotomous responses, the majority have a range of alternatives. Apart from a few Likert scales, categoric response scales predominate. Efforts have been made to obtain the highest level of measurement possible for each aspect under consideration. Many of the responses combine a positive or negative response with frequency, for the sake of economy.

A number of the structured questions are used as screening questions, and the respondent is then guided into providing more detail by further structured or unstructured questions. In this way, depth has been added to the instrument.

Sequence of questions - The order of the questions is intended to be meaningful for the respondent, so that related questions are grouped together. General questions in such groups appear first, followed by more specific ones to avoid influencing answers. For example, knowledge questions precede those giving relevant information. Questions designed to elicit more sensitive data are posed later, in the hope that the respondent will be more relaxed and have established a rapport with the interviewer. In order to avoid response bias, factual questions are interspersed between questions with categorical and Likert scales.

A number of check questions have been formulated to establish the validity of some answers. These appear in different sections so that the respondent does not readily relate them to previous questions. However, their placement remains logical to the sequence of the instrument. Such questions are indicated in Schedule One. This practice will assist in identifying instances where a respondent may have selected a negative response simply to avoid a series of questions and thus complete the instrument more quickly. In many cases, further explanation for negative replies is requested, which will also prevent this happening.

Instrument length - As explained in 7.2.1, the main reason for dividing the instrument into an interview and a questionnaire was the large number of questions to be asked, due to the complexity of the subject. It is felt that respondents are more likely to be tolerant of its length as the data will be used to promote their personal welfare. However, the results of the field test will indicate whether the



instrument can or should be shortened. Table 7.2 indicates the distribution of items between the questionnaire and the interview. Where a matrix has been used, such as in the question relating to financial dependents (item number 3 in the questionnaire), each column has been counted separately. The complexity of aggregate health as a construct means that the investigation of each related concept is far more superficial than for an instrument concerned with the measurement of only one concept. However, this is acceptable as the intention is to obtain a comprehensive profile and not a score.

Figure 7.2: Distribution of items between the interview and questionnaire

Section	Quest.	Int.	Total
Biographic and demographic	7	10	17
Non-occupational	5	14	19
Occupational	51	26	77
General health	6	63	69
Health risk	0	50	50
Total	77	184	232

Instrument format - The instrument has been designed to have a professional appearance and be user-friendly. The layout is logical, with spaces, numbers and headings indicating groups of questions and screening questions. Item responses are separated to avoid confusion. Simple instructions are given to assist the respondent, for example "you may tick more than one method" and "If yes, please state...".

Administration of the instrument - Respondents will be informed of the purpose of the study and how their participation could influence them personally, how they were selected for participation, how the information will be used and their interests protected, and what is required of them. Having agreed to participate, they will be asked to complete the questionnaire and return it to the researcher at a mutually suitable time, when the interview will then be conducted. Questions that they do not understand may be clarified during the interview. They will be told that they may omit any questions they do not wish to answer, as this is preferable to untruthful answers. They will also be told how long the questionnaire and interview will take to complete. This explanation will be conveyed in person or by means of a written explanation, depending on what is most appropriate.

The interview will be conducted in a non-threatening environment, where the respondent is comfortable. The interviewer will try to create an accepting environment and emphasise the protection of confidentiality and anonymity, so that social desirability response bias is reduced. Upon completion of the interview, they will be thanked. Abnormal findings, such as hypertension, will be followed up by means of additional readings and referral.

Data elicited during the interview will be recorded in writing, whilst it is in progress. If it is not possible to keep up with the respondent, brief notes will be made and these will be written out in full immediately after the interview, rather than allowing the recording to become too intrusive in the communication process.

Coding the instrument - responses for structured questions have been precoded using numbers. Answers for unstructured questions will be coded according to the range of answers obtained from all subjects. The coded responses for all questions will then be captured to form a database, in order to conduct the data analysis by means of a computerised statistical package. The database package to be used for the field test will be DBase.

Respondents sometimes fail to mark a preselected response for structured questions because they do not feel that any match their position with regard to the subject. Often they will write in a response, that some researchers feel should then be disregarded (Burns & Grove, 1987). In this instrument, items asking for a further explanation of an answer have been included for opinion-related questions. Therefore, the researcher can validate answers and establish whether the available responses really were unsuitable or if the respondent did not understand the question as intended. Furthermore, unmarked responses or written responses for structured questions could be completed at the interview, provided that they were not left out because the respondent did not wish to answer them. If a number of respondents in the field test write in responses instead of selecting from those offered, the response sets will be altered and recoded provided the list of responses is not too long.

For some questionnaires, questions critical to the research subject are identified. If these are unanswered by the respondent, that particular question is excluded from the study. This practice will not be observed for this instrument as its main purpose is to

obtain a profile not a composite score. Furthermore, respondents will have been told to leave out questions that they really feel uncomfortable about answering to avoid untruthful answers. If it is found that respondents consistently miss certain questions, these will be re-evaluated to establish whether they are inappropriate, irrelevant, or confusing. However, if a respondent leaves out more than 10% of the questions, this instrument will be discarded and another respondent sought.

A log will be kept of all decisions relating to coding so that the same decision is made for all respondents. In this way, the reliability of the data will not be affected. The log will also assist with the refinement of the instrument after the field test.

Data cleaning - Twenty percent of the instruments will be rechecked for coding and data capture accuracy. Other statistical checks will include range checks, checks on extreme values, and "if-then" checks (for example, a male respondent will not have a score for parity).

(Sources consulted for this section - Burns & Grove, 1987; LoBiondo-Wood & Haber, 1990; Polit & Hungler, 1985; Treece & Treece, 1986; Wilson, 1989.)

#### 7.2.2.2 Operationalisation of variables for the derivation of items

A large number of research variables have been selected to represent the model of aggregate health status in an organisation. The process of operationalising these variables in order to answer the research question formed part of the first phase of the

research, and has already been discussed in great detail in Chapter Six. Items for the instrument have been derived from these variables.

Although it is accepted that the "use of operationalized terms is to discriminate cases, not to convey the full meaning of the concept" (Stevens Barnum, 1990, p. 160), it is important that there is correspondence between the theoretical and operational definitions in a study. As Wilson remarks, "The researcher's primary task is to find or develop an instrument(s) to measure the construct of interest" (1989, p. 343). This issue affects the validity of the instrument and is therefore extremely important in a study such as this. Consequently, efforts to demonstrate such correspondence have been made in Schedule One, that gives a detailed description of the items and responses that represent each of the variables (see end of thesis). Indications (square brackets) are given where items collect data pertaining to more than one variable. Comments, such as acknowledgements of the source of questions that are not original and the rationale for question formulation where relevant, are also included in square brackets.

### 7.2.3 Validity and reliability of the instrument

The evaluation of the reliability and validity of an instrument is an essential aspect of its development. Although there are several types of validity and reliability testing that may be considered, the particular combination will depend upon the purpose and nature of the instrument (Wilson, 1989). Generally, instruments to be used for individual assessments on which to base clinical decisions require a more rigorous standard than those

to be used for administrative decision-making. As this instrument is intended for the latter purpose, it will not be subjected to the full range of tests especially as some would be inappropriate.

There are a number of factors that may contribute to measurement errors, and so affect the validity and reliability of data elicited by an instrument. Attempts have or will be made to take account of these in designing or using the instrument. Situational contaminants occur as a result of the subject's awareness of the researcher's presence (reactivity), the location, and environmental factors such as the time of day and temperature. Response set biases, lack of clarity in response items, inadequate selection of items to represent the construct, administrative variations, and personal factors such as fatigue and boredom in the respondent are other sources of error. (Burns & Grove, 1987; Polit & Hungler, 1985; Wilson, 1989.) Sources of error that may arise when biophysical and physiological measures are made, have been mentioned in 7.2.1.

It must be emphasised that neither validity nor reliability are "an all-or-nothing phenomenon but rather a matter of degree" (Burns & Grove, 1987, p. 294), and that they are situation specific. As Polit & Hungler (1985, p. 240) note: "The reliability of an instrument is not a property of the instrument, but rather of the instrument when administered to a certain sample under certain conditions." Similarly, "An instrument may be very valid in one situation and not in another" (Burns & Grove, p. 294). Therefore, it is essential that the researcher stipulate the particular situation and population for which the instrument was developed. This instrument has been developed for use



in an organisation (workplace). Although it may be necessary to alter its form for specific situations this will depend upon the nature of the organisation and such changes should be minimal.

Validity and reliability in an instrument are inter-related. If it is not reliable due to inconsistency and inaccuracy it would measure too many other factors and so would not be a valid indicator of the target variable. However, high reliability is not a measure of validity as the method of measurement itself may not be a valid indicator. (Polit & Hungler, 1985.) It is necessary to consider this relationship when testing the instrument.

The difficulty in establishing the validity and reliability of an instrument is indicated by Noack (1991, p. 107) who points out that in developing instruments "the requirements in terms of content, conceptual scope, reliability and validity will often not be complementary but competitive". This is certainly the case with this instrument that seeks to measure aggregate health with all its various dimensions, as evidenced by the many variables identified for its assessment, and yet yield valid and reliable data. It is a far more exacting task than for an instrument that is measuring only one construct, such as work satisfaction or anxiety, in which case a number of the tests would be more appropriate or straightforward to apply. Consequently, some of the tests for reliability and validity will be addressed in the field test described in this study whilst others will need to be conducted in future field tests.

### 7.2.3.1 Validity

Validity refers to the ability of an instrument to actually measure the abstract concept that it claims to measure. The extent to which items other than the concept are measured by the instrument is known as systematic error. As this decreases so the validity increases (Burns & Grove, 1987). There are three main types of validity to consider, namely content, construct, and criterion validity. Content validity concerns the adequacy of coverage of the content area. Some authorities (Burns & Grove, 1987; Polit & Hungler, 1985) state that it is more relevant for instruments that are designed to measure subjects' knowledge of a specific area. However, others (LoBiondo-Wood & Haber, 1990; Treece & Treece, 1986; Wilson, 1989) do not confine their discussion of content validity to these instruments and it is thus considered pertinent for this instrument. Part One of this study was concerned with the identification of the content area to be investigated, in order to measure aggregate health status. The development of the model and the identification of variables from this content area, together with the subsequent derivation of items as shown in Schedule One are an indication of the efforts to establish the content validity of the instrument. In addition, the instrument has been subjected to the scrutiny of a number of experts and will be submitted to others in the pretesting stage of development.

Criterion validity relates to the effectiveness of the instrument as a predictor of an individual's position on one measure based on their position on another instrument or criterion (Wilson, 1989). This could relate to present standing (concurrent validity)

or future events (predictive validity) and is determined by correlational analysis. This instrument is primarily concerned with the establishment of aggregate health status, and therefore the profile for the organisation revealed by the instrument could be validated by data gathered from other parts of the strategy. For example, criteria such as the sickness rate, employee turnover rate, use of health care provided in the workplace, and occupational accident rate for the organisation could be used to validate the findings of a survey using the instrument. It must be noted that the establishment of the criteria may be difficult as reliable and valid criteria are not always readily available. Nevertheless, criterion validity is an extremely important test for an instrument and will be assessed where possible for this study and suggested for future field tests.

Construct validity is concerned with the fit between the conceptual and operational definition of variables, to establish whether the instrument really does measure the theoretical construct it claims to measure. Both logical and empirical procedures are used. Of all the types it is considered the most important. "Other types of validity alone cannot sufficiently demonstrate a valid measurement method" (Burns & Grove, 1987, p. 296). However it is a challenging process that may take years to establish.

The process begins with the analysis of the theoretical concepts in order to clarify their connotative meaning. From this the domain of the construct is identified thereby allowing the development of methods to measure the construct. (Burns & Grove, 1987). Phase One of this research was concerned with this aspect of the process.

The next stage involves factor analysis of the data collected during its field study, in order to investigate relationships between the items of the instrument. Those that do not correlate with other items are then excluded on the premise that they do not measure the construct of interest. As this instrument examines so many variables, due to the complexity of aggregate health, this stage is not regarded to be as appropriate as it would for a more simple construct. It is not expected that all of the items will relate to each other considering the diversity of variables involved. Nevertheless, the data will be analysed with a view to identifying those items that are more useful indicators of health status.

The contrasted groups approach is another stage in the development of construct validity. Based on the theoretical considerations of the construct, hypotheses are made about the expected response of groups that differ on the critical attribute. Data collected from these groups by means of the instrument are then analysed using statistical techniques such as analyses of variance or the t-test. Significantly different results for the groups, in the predicted direction, are regarded as validation of the instrument. This approach will be included in future statistical analyses.

Yet another approach is known as nomological network validity, whereby propositions within the theoretical or conceptual framework are tested. Therefore, if the theory states that construct X is positively correlated with construct Y, and instrument A is a measure of construct X, whilst instrument B is a measure of construct Y, then scores for A and B should

be positively correlated. If this relationship is found, A and B are considered valid measures of X and Y. (Burns & Grove, 1987; Polit & Hungler, 1985; and Thomas, 1990.) As the instrument in this study is based on a conceptual framework, propositions are not yet well developed. However, portions of it were derived from existing theory with well formulated propositions and these will be used to test relationships where possible. Therefore, findings for one aspect of the instrument may be predictive of those for another. For example, on an individual level it is possible that the individual's exposure to occupational hazards may indicate the type of health problems they experience. Similarly, on an aggregate level organisations with high levels of work satisfaction reported by their members would be expected to be characterised by involvement in decision-making

Convergent, divergent and discriminant validity are other approaches to developing construct validity. They will not be addressed in this study.

As noted in the introduction to this section, validity may be influenced by a number of other issues, all of which have been considered in the design of this instrument. Examples of these are discussed below.

The administration procedure can affect the validity of the data. For example, questionnaire response rates should be greater than 80%. To attain such rates it is recommended that when the user hands out the questionnaire an appointment for the interview is arranged, at which time the completed questionnaire will be returned. If it is incomplete, the user will include the unanswered questions in the interview, provided that the subject is willing to answer them.

In developing response sets for structured questions, provision has been made for individuals who do not have an opinion on or knowledge of the subject under consideration to answer "do not know". This will prevent guessing or the expression of an opinion when one does not in fact exist.

Missing answers and written answers, instead of selecting a response for a structured question, can affect validity. Decisions taken in this regard have been discussed in 7.2.2.1.

Instruments used for biophysical measures that are incorrectly calibrated may introduce a systematic error into results and thereby invalidate them. For example, a scale that consistently over or under-measures the weight of subjects. Therefore, instruments must be checked and properly calibrated by a recognised authority before conducting the survey.

Finally, the question phraseology and order in the instrument should not influence the respondents' answers, and the instructions should be clear to ensure that they understand how to complete it (Treece & Treece, 1986).

#### 7.2.3.2 Reliability

To be reliable, the instrument must be shown to measure the construct or variable of interest in a consistent manner across subjects and be stable over time (Wilson, 1989). It is considered a measure of the amount of random error in a measurement technique (accuracy), and is also equated with the stability and dependability of the measuring tool. Therefore, the



less variation in repeated measurements of the same attribute the more reliable it is. As with validity, there are a number of ways in which the reliability of the instrument may be tested depending on the nature of the instrument and the aspect of the reliability concept that is of greatest concern. (Polit & Hungler, 1985.)

The stability of the instrument is evaluated by means of test-retest procedures. This is problematic for an instrument of this nature as it is expected that a number of the variables will change between testing in terms of the model. It has been clearly stated that health is a dynamic concept. In this case, repeated measures that do not change may even infer unreliability. However, some of the more enduring dimensions and factual information, such as past health status, could be investigated in future field tests. In this field test, subjects who are found to have abnormal biophysical measures such as a raised blood pressure will be retested within a short interval to assess the accuracy of the first reading. Inaccuracies could result from situational factors, physiological variations, measurement techniques, or incorrectly calibrated instruments, the latter being responsible for systematic error. Users must be correctly trained in measurement techniques and situational factors should be taken into account when planning the study (for example, a quiet, comfortable, non-threatening place). However, this will only address these aspects. Retests will not establish reliability in a comprehensive manner.

An additional problem with this approach is that subjects' responses could be influenced by their the memory of their initial responses, which could produce

correlations that were not in actual fact due to the reliability of the instrument. Similarly, boredom or resentment at being tested twice could affect their responses and yield spuriously low reliability estimates.

The accuracy of recall as a source of data in self-reports has been taken into account in designing the instrument. For this reason, subjects are only asked to recall events that occurred in the previous year, except in the case of a pregnancy in the preceding two years, the history of serious illnesses or injuries, and occupational history. Furthermore, there are check questions to assess the accuracy of the data obtained on some questions. A number of examples of these are given in Schedule One. Relationships between these questions will be examined in the data analysis of the field test.

The evaluation of the internal consistency of an instrument pertains to the homogeneity of items and the extent to which they measure the attribute under consideration. The techniques used include split-half reliability and correlating each item with the total score. These procedures are inappropriate for this instrument as the items are not intended to be homogeneous in view of the complexity of the construct, and the instrument is designed to produce a profile rather than a composite score.

Finally, random errors in data elicited by the instrument may be due to a "transient state in the subject, in the context of the study, or in the administration of the instrument (Jennings & Rogers in LoBiondo & Wood, 1990, p. 249). Therefore, efforts must be made to control these when using the instrument.

For example, the interviewer must be careful to establish a relationship of trust with the respondent and allay anxiety. The explanation about the purpose of the study and measures to protect confidentiality are important in this regard. There must be uniformity in the instructions and explanations given, as well as the manner used with respondents. They are more likely to be relaxed if the interviews are conducted at a time and in a place of their choice. The instrument must also be administered in a consistent manner for all respondents. For instance, all the instruments will be completed on an individual basis rather than some in a group setting and some on an individual basis. The coding of responses must be consistent for all completed instruments so that data-handling is uniform. Consequently, the data log mentioned in 7.2.2.1 is essential.

From the preceding discussion, it is evident that the demonstration of the validity and reliability of this instrument will be a lengthy process that cannot be achieved in the course of this study alone. Therefore, the efforts made in this regard through the field test are only a beginning.

### 7.3 The field test

In order to test the instrument and evaluate the model and strategy, a survey of an organisation will be conducted. The principles of survey research will be carefully observed for this study in view of its twofold purpose. However when recommendations are made in Chapter Nine for the use of the strategy and instrument by the occupational health nurse (who may have little research knowledge) the procedure to be followed will be simplified.

### 7.3.1 Survey design considerations

Burns & Grove (1987, p. 243) state that the quality of a survey's findings may be affected by a number of sources of bias. Protection against these "is achieved through (1) conceptual and operational definitions of variables, (2) sample selection, (3) valid and reliable instruments and (4) data collection procedures that achieve some environmental control." All of these have been taken into account in designing the instrument and planning the field test, and are discussed in various place throughout this chapter. However, it is appropriate to mention two important aspects at this juncture.

#### 7.3.1.1 Control of extraneous variables

One essential aspect in designing the survey to be used as a field test is control. Control relates to "the measures the researcher utilizes to hold the conditions of the investigation uniform", so that bias on the dependent variable that can influence the outcome is prevented (LoBiondo-Wood & Haber, 1990, p. 129). This bias results from extraneous variables that have an irrelevant association with the dependent variable (Polit & Hungler, 1985). The amount of control necessary and possible depends on the type of research. It is of the utmost importance in experimental research, that is concerned with the establishment of causality. However with the survey approach, control is more difficult because it is conducted in a field setting as opposed to a laboratory setting and there may be more than one independent variable. The difficulty is further compounded in this study as it aims to investigate the relationships

between a number of research variables, rather than between a dependent and independent variable. Although there is no intention of establishing causality, it is still most important to control extraneous variables in order that the findings be valid and useful.

There are two types of extraneous variables. Those that arise out of the research situation and are termed extrinsic factors, and those that are intrinsic to the subjects of the study.

Extrinsic factors will be controlled by ensuring consistency in data collection as far as possible. This entails the control of environmental or situational contaminants. The subject must feel physically and psychologically comfortable in the surroundings where the instrument is administered. Preferably, the same place should be used, but this is not always practical when conducting surveys.

The timing of the data collection should be consistent. The survey will be conducted as quickly as possible, so that events occurring within the organisation and the wider community do not act as intervening variables that may distort the findings. Furthermore, it will be planned for a time when the organisational workload is not unusually high or low. Interviews should be conducted at the same time of day. It is generally inadvisable to interview a subject at the end of a working day, as fatigue may affect perceptions of health and anxiety about missing transport to home may influence the depth and accuracy of responses. However, as respondents are likely to vary regarding the most convenient time for them to be interviewed, appointments will be made to suit their individual needs.



Efforts will be made to maintain consistency in communication with the participants during data collection. The questionnaire and structured interview schedule will assist in this regard. The researcher will personally conduct the interviews, thereby minimising bias that could result from having a number of interviewers. A consistent description of the research in terms of its purpose, conduct, and the handling of the results will be given when individuals are approached to participate. As far as possible, the researcher will give consistent explanations about the items in the instrument. Great care will be exercised to avoid leading statements or questions. The instrument will be administered on an individual not a group basis. However, it is probable that an interpreter will be necessary for some participants. Where this is the case, the interpreter will be carefully instructed on what to say in order to reduce the influence of this additional person on the data collected. Furthermore, the interpreter selected will be acceptable to the subject to increase the likelihood of obtaining truthful answers to the personal questions.

Intrinsic factors, relating to the control of the characteristics of the subjects will be accomplished by means of a sophisticated sampling design, that eliminates bias and ensures that the sample representative. Therefore, the instrument will be administered to a stratified, random sample of the population. As the instrument investigates sociodemographic variables, the effects of these inherent characteristics on other variables will be taken into account.



### 7.3.1.2 Validity of the survey

A second important aspect to be addressed in the design and conduct of a survey is the validity of its findings. There are three kinds of validity to be considered. The first is the generalisability of the findings to situations outside of the study and is called external validity. In a survey, it is influenced by the selection of the sample and the effects on the subjects of being studied. The former is especially important as the sample must be representative for the findings to be generalised to the study population and other situations. In this study, the population is the members of the organisation being studied. The relationships between the variables will be particular for that organisation as will the health status and needs. Therefore, it is not intended that the findings be generalised to other organisations. However, they must be valid to be used to evaluate and refine the model, strategy, and instrument. This means the findings must be generalisable to other samples of the population (Polit & Hungler, 1985). The use of a random stratified sample will facilitate this.

Internal validity is the second type of validity and it is closely related to control. This "refers to the interpretation of the findings within the study" (Treece & Treece, 1986, p. 266). It is largely concerned with the extent to which the independent variable is related to the dependent variable and is therefore intimately affected by the control of extraneous variables. Although this study aims to investigate the relationships between a number of research variables as opposed to causality between dependent and independent variables, it is still

important to control extraneous variables in order to improve the internal validity of the study. There are two further aspects to be considered. The first is the loss of subjects before they have completed the survey instrument. The second relates to selection bias, whereby subjects selected for participation according to the sampling plan do not actually participate. A record will be kept of the number of such instances, so that the possibility of their effect on the validity of the findings may be identified.

The third type of validity that can affect survey findings pertains to construct validity. This has already been discussed in great detail in 7.2.3.1.

#### 7.3.2 Description of the setting to be used for the survey

The setting for the survey will be a campus of a university situated in Durban, Natal. This organisation was selected because it employs a large number and wide diversity of individuals. In addition, the nature of the work performed varies greatly, with categories of occupation ranging from unskilled to professional. Therefore, the members of the organisation include white and blue-collar workers of all occupational categories. Although it may be argued that a university differs significantly from other organisations in that it is an educational institution and is not concerned with the production of commodities, this is not so as it needs to function effectively like any other organisation in order to achieve its goals. Hurst & Khalil (1986) note that whilst a university does differ from general industry because it has both academic and nonacademic functions, it is still a business. Furthermore, it is a

residential and public facility and so has features in common with other work settings such as libraries and hotels. In view of these commonalities, the cross-section of individuals employed by this organisation, and the diversity of work performed in it, the university can be considered an appropriate setting to test the model and strategy. The university does have another Durban campus for its medical faculty, which shares the same management and some service departments of the main campus. However, it is geographically removed from the campus selected for the study, the nature of the work performed is more specialised, and it functions as a separate organisation with its own social environment and perspective which is mainly medical.

For these reasons, it will not be included in the survey. A few points must be mentioned to provide a backdrop for understanding the organisation. At this time the country is undergoing major political change, there is a profound economic recession exacerbated by a serious drought, and Natal is experiencing unprecedented levels of politically associated violence.

The tensions that are present in Natal society are manifest in the university, which can be regarded as a microcosm of this society. The university itself is also in transition. The most noticeable change has been in its racial composition, due to a policy of equal opportunity and affirmative action, so that the staff and student population begin to reflect wider Natal society that is heterogeneous and multi-cultural. It would also appear that there is membership of most major political parties amongst the students and employees. The culture of the university itself is

changing, with traditions and values being questioned. Students have staged demonstrations about bursaries, admission and exclusion policies, and conditions in residences. There have been protests by workers about remuneration, a hitherto inconceivable event in an organisation long regarded as an enlightened employing body. Furthermore, there have been a number of occasions when the media has portrayed events at this university in an adverse light. To manage such an organisation in a democratic manner, with individuals' rights respected, presents a great challenge.

The principal of the university has stated that there will be changes in the management and functioning of the university. One of the reasons for this lies in the increasingly stringent financial restrictions that have had to be imposed on departments due to reduced government subsidisation of the university. Therefore, adaptation to provide education and research in response to changes in society, and to generate funds through consultation and research is imperative. This will be difficult because the economic constraints affect staffing levels due to freezing of posts, a limit on expansion, and possible retrenchment in the future. Consequently, the university is being forced to seek funding locally and abroad, in an effort to maintain fees at a level that is not beyond all but the elite. The acceptance of this funding makes it answerable to its sponsors for what happens on the campus, thereby introducing another party to an already complicated situation which is a definite disadvantage.

### 7.3.3 The survey population

The intended target population was all employees of this Durban campus of the university. However, when

permission was requested in June 1990 to conduct the survey, senior management expressed concern regarding the confidential nature of the information sought. Consequently, despite various suggestions about how confidentiality and protection of individuals' rights could be ensured, permission was only given in principle, with the proviso that respondents must not participate in the study during work time. Access to university records to produce a profile of the population was not granted. This was not surprising in view of the events and trends described in 7.3.2. The researcher was not an occupational health nurse employed by the university, nor had it commissioned the study. Therefore, there were reservations about the motives for conducting the study and how the results would be used. Management felt that the revelation of information to produce population parameters could expose them to the criticism of employees, which it was most anxious to avoid. This stance reflects the university's policy of nondiscrimination, whereby reference to the gender or ethnicity of its members is discouraged. The resultant dilemma was a good example of ethical considerations interfering with the scientific rigors of research. Furthermore, management was concerned that some of the information requested for the broad profile was not available and they did not wish to ask staff who were already overextended to produce this.

As there were four university employee representative organisations with the goal of protecting and promoting the interests of their members, it was decided that they should be approached for assistance. Three agreed to participate in the study, on condition that the results be made available to them so that they could motivate for improved

conditions should this be necessary. In fact two of them had been concerned about the frequency of reports of stress being experienced by members, and so they welcomed the study. Although the chairperson of the fourth employee representative organisation declared interest in the study from the outset, written approval and feedback on the instrument was not obtained despite repeated contacts. Therefore, to avoid any further delays in conducting the survey, the members of this organisation were excluded from the population. The chairman had stated that the membership for all three campuses of the university did not exceed 150, which was relatively small in comparison with the other organisations.

The final permission to conduct the study was granted by the three employee representative organisations in January 1991, so that the whole permission seeking process had taken eight months in all.

The decision to involve these organisations in the study meant that the rights of participants would be protected. Consequently, these people would be more likely to be honest in expressing negative feelings about aspects of the organisation than if the study had been conducted through a university department, which could be perceived as able to take action against them if displeased by their responses. The greatest disadvantage of conducting the survey through these organisations was that university employees who did not belong to such organisations would be excluded.

Their records of membership revealed that at the time of the survey there were 1555 employees on this campus and that 63.02% of them belonged to the three



representative organisations (Table 7.3). Although this was a serious limitation for the survey there was no alternative due to the lack of support from the university management. Therefore, the accessible population was all employees of the main Durban campus of the university, who were members of one of the three employee representative organisations.

Table 7.3: Comparison of the target population with the accessible population in terms of membership of an employee representative organisation (ERO)

Target population		Accessible population*				Non members of an ERO
		ERO No 1 Academic	ERO No 2 Non academic	ERO No 3 Non academic No 3.1 No 3.2		
No of individuals	1555	226	383	80	291	580
% of target population	100	14.53	24.63	5.14	18.71	37.29

\* - Collectively, the 980 individuals who belong to these organisations constitute 63.02% of the target population

Note: 5 employees have been counted twice as:  
 4 employees belong to both No 2 and No 3.1 and  
 1 employee belongs to both No 2 and No 3.2

It should be emphasised that the target population is not all employees of all universities as the aim of the research is to identify the form, prevalence and relationships between the variables in this particular organisation, which is unique. These findings will then be used to revise or refine the strategy and instrument for use in other organisations. When the instrument is used by an occupational health nurse in the workplace she is not as likely to be bound by the same constraints as will operate in this study.

#### 7.3.4 Ethical aspects

A number of human rights need to be protected when conducting research and these will influence the sampling plan. Sometimes, the measures taken in this regard conflict with the scientific rigour of the research and to a certain extent this will be so in this study, resulting in limitations for it. Each of these rights and the steps to protect them will be discussed.

The right to self-determination means that individuals should have the option of declining to participate in the study or to terminate their participation at any time. Certainly there should be no coercion to participate, nor should there be covert participation whereby information directly related to individuals is collected without their knowledge. The university's refusal to allow the researcher access to records to produce a broad profile of members prevented any covert data collection. Individuals selected for participation will be fully informed of the nature of the research, the reasons for conducting it, and how the findings will be used. They will be assured that they are under no obligation to participate. Should they agree to do so, they may terminate that participation whenever they wish or leave any question out, which they would prefer not to answer. As this practice could result in people selecting themselves out, thereby introducing a bias in the study and affecting its internal validity, a record of the refusals and reasons for doing so will be maintained for evaluation. In addition, a pilot study will investigate the willingness of individuals to participate and the acceptability of the study. Should

this reveal any major problems in obtaining participants, a reassessment of the feasibility of the study may be necessary.

The assurance to be given to participants that they do not have to answer any question which they are uncomfortable about, is intended to respect their right to privacy and to protect them from discomfort and harm. In addition, great care will be taken to ensure that information which is revealed is used in a manner that will not result in reprisals against that individual. Permission will first be obtained from the individual before any action is taken and their employee representative organisation will be involved. For example, should a work-related health hazard be recognised the respondent will be consulted regarding the manner in which the issue should be handled. Furthermore, it is important that any health problems that are identified in a respondent must be followed up with appropriate action to protect their health.

A number of measures will be used to protect the rights to anonymity and confidentiality. The names of respondents will not appear on the data collection instruments, in order to prevent accidental breach of confidentiality. Occupational categories with a small number of incumbents will be excluded from the sample, to avoid identification of individuals when the data are published. These categories consist of some senior management posts where the incumbents are likely to be well known in the organisation. The sample selection, data collection, and analysis will be conducted by the researcher so that no other person will have access to the data. The findings of the study will be presented in an aggregate manner without the use of names so that individuals cannot be identified. Information that is

revealed will be treated in the strictest confidence, and in the event of a respondent stating that it is not for disclosure this restriction will be respected.

It is important to recognise that the fundamental reason for making the decision to conduct the study through the employee representative organisations was to protect the above mentioned rights of participants. Although this will be a limitation of the study, in terms of the sample's representativeness of the population, it is considered essential from an ethical perspective. The agreement by these organisations to support the study was reached by means of the following process. The researcher approached the leader of the organisation and explained the purpose of the study. A letter describing the study and requesting the support of the organisation and its members was then sent for presentation to the executive and members (Annexure 1). In one case, the organisation published this letter to ensure that all members were given the opportunity to raise objections or contribute suggestions (Annexure 2). As no objections were received, the organisations then gave permission. Finally, the organisation was asked to comment on the survey instrument to ensure that important aspects were not omitted and that it did not contain items that could be offensive for members. This demonstrates the efforts made to fully inform the target population about the study, assure them that they could refuse to participate, that they would be protected from reprisals through the involvement of their representative organisations, and that the findings would be made available to promote their interests where necessary.

Therefore, the conduct of the research will be governed by these ethical considerations. This is

extremely important in view of the current situation in the university and the need for sensitivity and responsibility so the research does not have negative effects, particularly regarding future plans for health care in the organisation.

#### 7.3.5 The sample plan

In this study it will not be possible to collect data on all members of the accessible population as it would be too time consuming, particularly as the researcher will conduct the interviews in view of the ethical reasons mentioned in 7.3.4 and to control bias introduced by a number of interviewers. Therefore, a sample of the population will have to be drawn. The manner in which this is done will determine the external validity of the study, which refers to the extent to which the sample represents the population, and consequently the extent to which the findings from the sample can be generalised to the population. As the study is concerned with describing the attributes, beliefs, behaviours, and the health status of the population, it is extremely important that this sample be adequately representative or descriptively accurate. A carefully designed sample plan will improve the sample's representativeness of the population, decrease systematic bias and sampling error, and therefore increase the precision and confidence of the statistical measures of the sample (Burns & Grove, 1987).

##### 7.3.5.1 Nature of the sample

A sophisticated sampling plan is necessary in order to maximise the external validity of the study within the constraints imposed by the ethical

considerations. Consequently, a probability sample strategy will be used. This will reduce sampling error as every individual will have a chance greater than zero of being selected. Systematic bias (aside from the constraints) will be reduced because random selection prevents the choice of subjects on the basis that they will be more likely to participate or agree with the researcher's stance. Furthermore, the use of a probability strategy means that more powerful statistical analysis techniques may be used than a non-probability sample would permit.

The selection of a random sample is determined by the ability to develop a sampling frame, which is not always possible. However, in this study the sample frame can be defined because listings of the target population with some of their characteristics are available. Furthermore, because these characteristics are critical to the achievement of a representative sample and also correlate with the variables being investigated in the study, a stratified sample may be drawn (Burns & Grove, 1987).

#### 7.3.5.2 Criteria for selection

The main criteria for selection for the sample are obviously that the individual be an employee of the main Durban campus of the university and belong to an employee representative organisation in that university.

The listings of the population differentiate between academic and nonacademic employees, occupational category and rank, and whether the individual is employed on a part-time or full-time basis. Therefore, the population can be divided into a



number of homogeneous subsets that will serve as the strata, from which a proportionate random sample will be drawn. Proportionate as opposed to disproportionate sampling will be used because it is not the researcher's prime interest to understand the difference between the strata but rather to obtain a representative sample of the population, as far as is possible in view of the ethical considerations.

Within the subsets of academic and nonacademic employees, the individuals are classified according to occupational category and assigned a number of occupational rank in the organisation, indicating occupational status.

As explained in 7.3.4., a number of the senior occupational categories will have to be excluded to ensure confidentiality in view of the very small number of incumbents. The exclusions represent 3.26% of the accessible population, so that the sample will be drawn from 96.74% of this population. The final academic accessible population is 52.94% of the target population, whilst the final accessible nonacademic population represents 63.81% of the target population. In total, the sample will be drawn from 60.96% of the target population.

Membership of an employee representative organisation (ERO) is related to academic and nonacademic status. ERO No.1 has been established to promote the interests of academic employees, whereas No.2 and No.3 provide similar support for nonacademic employees. The majority of members of ERO No.2 are clustered in the senior nonacademic occupational categories (Ranks 1 to 15), whilst members of ERO No.3 are concentrated in the lower categories. Table 7.4

shows the membership distribution for academic employees, according to the occupational categories to be sampled. Employees in nonacademic posts may belong to either ERO No.2 or No.3., and in fact five individuals actually belong to both. No.3 is further divided in terms of the recognition agreement between itself and the university, so that members in No.3.1 form part of the recognition agreement, and those in No.3.2 fall outside of the bargaining agreement. Members of the latter belong to the lower occupational categories (Ranks 13 to 18), whereas individuals in ERO No.3.1 generally occupy the categories between No.2 and No.3.2 (Ranks 10 to 16). Table 7.5 illustrates this pattern.

Table 7.4: Distribution of academic employees according to occupational rank and category

Occupational rank	Occupational category	Target population	Accessible population of ERO No 1		No to be interviewed
			Actual No	% of target pop.	
301	Professor/Research Professor	80	44	55.00	2
311	Associate Professor/Associate Research Professor	32	21	65.63	1
321	Senior Lecturer/Senior Research Fellow	140	89	63.57	5
331	Lecturer/Research Fellow	117	61	52.14	3
371	Junior Lecturer	11	3	27.27	0
Total		380	218	57.37	11

Table 7.5: Distribution of membership of employee representative organisations 2, 3.1 and 3.2 according to occupational rank

Occup. rank	Target popul- ation (TP)	Accessible population of ERO No. 2		No. to be inter- viewed	Accessible population of ERO No. 3.1		No. to be inter- viewed	Accessible population of ERO No. 3.2		No. to be inter- viewed
	No.	No.	% of (TP)	No.	No.	% of (TP)	No.	No.	% of (TP)	No.
7	21	14	67	} 2						
8	38	27	72							
9	76	57	75	3						
10	97	56	58	3	5	5	} 1			
11	92	69	75	4	1	1				
12	121	71	59	} 4	7	6				
13	143	53	37		15	10	1	2	1	
14	90	12	13		26	29	1	17	19	1
15	91	2	2	1	22	24	} 1	48	53	3
16	73				4	5		44	60	2
17	9							6	67	
18	248							174	70	9
Total	1099	361	33	20	80	7	4	291	26	15

Note: 1 employee belongs to both ERO No 2 and No 3.2  
2 employees belong to both ERO No 2 and No 3.2  
1 employee belongs to both ERO No 2 and No 3.1  
1 employee belongs to both ERO No 2 and No 3.2

Tables 7.4 and 7.5 also show the strata according to occupational rank and the number of individuals to be interviewed in each rank on the basis of proportionate sampling. Some ranks with a small number of incumbents and that are adjacent in the ranking order have been linked for sample selection. Brackets indicate where the latter has occurred.

The strata that have been identified have all been included as variables selected for use in the strategy for the determination of the aggregate health status, and are therefore important in terms of the study itself. Gender will not be used for stratification, as it was not listed in view of the university's policy of nondiscrimination according to gender and race. However, it is possible to identify from an individual's title in the listing, the researcher's knowledge of the population and other enquiries. Therefore, once the sample has been selected, a comparison of the gender ratio in the population and sample will be made to assess the sample's representativeness (see 7.3.8).

#### 7.3.5.3 Sample size

It was decided that a 5% sample would be drawn, in view of the time and assistance constraints. However, when the sample frame was developed it resulted in a total of 948 individuals from which to select the sample. Five percent of this would have meant that the sample size should be 47, but this will be increased to 50, which is a 5.2% sample. Although a small sample such as this could affect the external validity, the use of a random sample to decrease bias, and stratification to decrease sampling error will improve

the representativeness of the sample. As a probability sampling strategy will be used it will permit the estimation of sampling error by means of inferential statistics. Nevertheless, it is important to realise that increasing the sample size will not decrease sampling error if there is a systematic bias in the sampling frame, as has been introduced by the ethical considerations of the study. The seriousness of this bias can be assessed because the target population is listed, thus enabling a comparison between some of the characteristics of this population and the accessible population to determine the representativeness of the sample of both. This will be discussed in 7.3.8.

As this is the first stage in the refinement of the data collection instrument, the small size of the sample can be justified. It will need to be further tested on a larger sample and in a number of organisations at a later date, particularly in view of the great number of variables involved. However, if correlations between variables in this study are found to match those of other studies, some indication of the construct validity of the instrument (7.2.3.1) will be obtained.

#### 7.3.6 Pretests and pilot study

The process of pretesting is intended to measure the effectiveness of the instrument in relation to such aspects as its length, wording, and validity, whilst "the pilot study is the preliminary small-scale trial run of the research study" (Treece & Treece, 1986, p. 378). The findings of the pretests and pilot study are then used to revise the instrument and procedure. In this study, they will be conducted in order to:

- \* assess the research adequacy of the instrument;
- \* obtain information to improve or perfect it;
- \* assess its feasibility for use;
- \* identify unforeseen problems when using it; and
- \* examine the reliability and validity of the data collection procedures.

(Burns & Grove, 1987; Polit & Hungler, 1985; Wilson, 1989.)

For the pretests, the instrument was submitted to a number of authorities for comment on the questions, responses to structured questions, and the technical aspects of layout and design. Apart from the study supervisors, these authorities included a social scientist, who had extensive experience in the development of survey instruments, and representatives of the three participating employee representative organisations. By virtue of their knowledge of the subject area and the population, these people were able to evaluate the adequacy of coverage of the instrument and so assisted in the development of its content validity. A few additional questions were included as a result of discussions with them. They provided invaluable advice regarding wording that may be offensive, insensitive, or unclear, and assisted with improving the user-friendliness of the instrument. All of them confirmed that it would be unacceptable to ask for data on income and actual financial contributions to dependents. Questions that were inapplicable to some strata were also identified. For example, the system of job rating is only used for nonacademic posts.

The pilot study was conducted in September, 1991. It involved the administration of the instrument to six



university employees, who complied with the sample selection criteria and were therefore representative of the population that the instrument would be used on. A random selection of four subjects was made from each of the three participating EROs. The first two on the list for each ERO were approached and asked to assist with the study. The ease with which they were located indicated that the sampling frame was convenient. They were given an explanation of its purpose and the measures to protect individual rights as planned in 7.2.2. All six readily agreed to complete the instrument and so the remaining names were discarded. Table 7.6 provides a breakdown of the characteristics of these subjects. The questionnaire was left with five respondents and a mutually suitable time for the interview was arranged with each. The sixth subject was not sufficiently literate to be able to fill in the questionnaire and therefore an appointment for the completion of the whole instrument, with the assistance of the researcher, was agreed upon.

Table 7.6: Characteristics of subjects used for the pilot study

		No of resps	Gender	Occupational rank	Occupational category
ERO No 1		1	male	321	Senior Lecturer/ Senior Research Fellow
		1	female	371	Junior Lecturer
ERO No 2		1	female	13	Admin Asst.
		1	female	12	Senior Admin Asst.
ERO No 3	3.1 in	1	female	17	Tea maker/ Cleaner
	3.2 out	1	male	13	Admin Asst..

The instruments were subsequently completed for all six subjects, initially selected, demonstrating that the procedure was effective. In most cases the questions requiring personal information were answered, despite the fact that the subjects were told that they did not have to answer any questions that they felt uncomfortable about. This was most encouraging and suggested that the efforts to make the instrument acceptable and reassure participants of the protection of their rights had also been effective. Where nonresponses occurred, subjects were asked the reason for this, in order to detect ambiguous and difficult questions or insufficient and unsuitable responses. The question on the co-operative functioning between departments, as an indication of social cohesion in the organisation, was one such example.

For the most part, the data collection methods were found to be suitable. Those questions that could require the probing of the researcher, such as the occupational history, were reallocated to the interview. A few other more straightforward, factual questions were put into the questionnaire.

The completion of the whole instrument did not exceed one hour, with the questionnaire usually taking 10 minutes. This was considered feasible for the whole study. The subjects stated that they did not feel that this was too long, especially when the study was being conducted in their interests and a number of them had learnt something about improving their health during the interview. This receptive stance assisted the researcher in establishing a rapport with the subjects and demonstrated that the efforts to obtain the co-operation of the EROs was worthwhile.

The subjects selected the place for the interview, as the room set aside for this purpose was inconvenient in terms of the distance from their work area. Although it would have been advantageous from a control point of view to conduct the interviews in the same setting, it was felt that this practice could have a detrimental effect on the response rate.

As a result of the pretests and pilot study, a number of questions were revised, removed, or replaced. Some additional ones were also included. In a few cases, the sequence of a few questions was changed. The instructions for answering the questions were also significantly improved, as were the responses for some of the structured questions. It was realised that the use of words such as "usually" and "average" could result in variable or imprecise answers and so these were eliminated if possible. However, this could not be done for all questions and the researcher recognises this shortcoming. In some cases, there are subsequent check questions to validate the answers or else the researcher will probe further. Schedule One reflects these changes (in square brackets), and in most cases gives the reasons for them.

In addition, a separate interview schedule and response sheet were devised. Spaces for responses to open questions were increased where necessary, and grids for ticking responses were created for the interview and questionnaire. This improved the layout of the questionnaire, so that it looked easier to read and complete, and would facilitate analysis. A copy of the revised questionnaire, interview schedule, and interview response sheet are provided as Annexures 5, 6, and 7 respectively.

### 7.3.7 Procedure used for the selection of the sample

A random sample within the strata was made, in accordance with the predetermined numbers indicated in Tables 7.4 and 7.5. This was achieved using the fishbowl technique. Within each stratum, every individual who satisfied the criteria for selection was assigned a number. For example, within the occupational category Number 9, of nonacademic employees belonging to ERO No.2, there were 57 eligible individuals who were listed alphabetically. They were assigned a number from 1 to 57 sequentially, beginning at the top of the list. Equally sized slips of paper were numbered from 1 to 57, placed and mixed in a fishbowl. An independent person was asked to draw the slips, without looking. The number on the first slip drawn was noted as the first individual in the sample for that stratum. The slip was then replaced and another drawn, so that each individual had a 1 in 57 chance of being selected. Obviously, if a slip was redrawn it was replaced without noting it again.

The same principle was applied for subjects used in the pilot study, whose names were included in the draw yet would obviously not be used again in the main study. In this stratum, three individuals were to be selected for the sample. However, an additional three were drawn in case of refusals to participate. The order in which the individuals are listed in the random sample will be used when approaching people for participation. For example, the individual who was drawn fifth will not be approached first. If this procedure were not followed, bias could be introduced whereby selection could be made according to the likelihood of the individual consenting to participate

or agreeing with the researcher's stance. This process was repeated for each stratum until the full sample had been selected.

#### 7.3.8 Realisation of the sample

Of the individuals approached to participate, only two declined outright. One was a member of ERO No.2 in occupational Rank 18, who politely refused due to his imminent retirement. He was extremely busy finalising a number of tasks and felt that another member would be able to make a more positive contribution to the study. The second individual, a lecturer belonging to ERO No.1, was also very busy. However, this person offered to participate later if difficulties were experienced in obtaining sufficient subjects. One individual selected from Rank 14, ERO No.2 was away on vacation leave and unavailable. Lastly, an individual who was also from ERO No.2 and occupied Rank 11, failed to keep three appointments and was not approached further as the researcher felt that this individual was too polite to refuse. In each of these cases, no pressure was put on them to participate and the next person in the order of the sample selection was approached. Therefore, the number of individuals who were selected for the sample and did not participate is small and not considered a bias in the sample.

Tables 7.7 and 7.8 compare the target population, the accessible population and the sample in terms of the strata and gender, in order to assess the bias introduced by the ethical constraints and to determine the sample's representativeness. It may be observed that in general the accessible population reflects the target population, although within the strata representativeness is directly related to the number of

Table 7.7: Analysis of the representativeness of the accessible population of academic employees of the target population, and the sample representativeness of the accessible population

Occup rank	Occup categ		Target population			Accessible population			Realisation of sample		
			Tot	Male	Fe-male	Tot	Male	Fe-male	Tot	Male	Fe-male
301	Prof/ Res Prof	Actual	80	69	11	44	37	7	2	1	1
		%	100	86	14	100	84	16	100	50	50
		Ratio		6.3	1		5	1		1	1
311	Assoc Prof/ Assoc Res Prof	Actual	32	24	8	21	14	7	1	1	-
		%	100	75	25	100	67	33	100	100	-
		Ratio		3	1		2	1		1	0
321	Sen Lect/ Sen Res Lect	Actual	140	115	25	89	71	18	5	3	2
		%	100	82	18	100	80	20	100	60	40
		Ratio		4.6	1		4	1		1.5	1
331	Lect/Res Fellow	Actual	117	71	46	61	36	25	3	2	1
		%	100	61	39	100	59	41	100	66	33
		Ratio		1.5	1		1.4	1		2	1
371	Jun Lect	Actual	11	6	5	3	1	2	-	-	-
		%	100	55	45	100	33	67	-	-	-
		Ratio		1.2	1		1	2		0	0
	Total	Actual	380	285	95	218	159	59	11	7	4
		%	100	75	25	100	73	27	100	64	36
		Ratio		3	1		2.7	1		1.75	1



Table 7.8: Analysis of the representativeness of the accessible population of non academic employees of the target population, and the sample representativeness of the accessible population

Occu- pational rank		Target population			Accessible population ERO = No 2, 3.1 & 3.2			No actually interviewed		
		Tot	Male	Fe- male	Tot	Male	Fe- male	Tot	Male	Fe- male
7	Actual	21	18	3	14	11	3	2	2	-
	%	100	86	14	100	79	21	100	100	-
	Ratio		6	1		3.7	1			
8	Actual	38	26	12	27	22	5			
	%	100	68	32	100	81	19			
	Ratio		2	1		4.4	1			
9	Actual	76	55	21	57	45	12	3	3	-
	%	100	72	28	100	79	21	100	100	-
	Ratio		2.6	1		3.8	1		1	0
10	Actual	97	42	55	61	24	37	3	3	-
	%	100	43	57	100	39	61	100	100	-
	Ratio		1	1.3		1	1.6		1	0
11	Actual	92	22	70	70	16	54	5	1	4
	%	100	24	76	100	23	77	100	20	80
	Ratio		1	3		1	3.3		1	4
12	Actual	121	27	94	78	18	60	4	1	3
	%	100	22	78	100	23	77	100	25	75
	Ratio		1	3.5		1	3.3		1	3
13	Actual	143	57	86	70	33	37	4	1	3
	%	100	40	60	100	47	53	100	25	75
	Ratio		1	1.5		1	1.1		1	3
14	Actual	90	77	13	55	46	9	2	2	-
	%	100	86	14	100	84	16	100	100	-
	Ratio		6	1		5	1		1	0
15	Actual	91	82	9	72	64	8	5	2	3
	%	100	90	10	100	89	11	100	40	60
	Ratio		9	1		8	1		1	1.5

Table 7.8 (contd): Analysis of the representativeness of the accessible population of non academic employees of the target population, and the sample representativeness of the accessible population

Occu- pational rank		Target population			Accessible population ERO = No 2, 3.1 & 3.2			No actually interviewed		
		Tot	Male	Fe- male	Tot	Male	Fe- male	Tot	Male	Fe- male
16	Actual	73	69	4	48	44	4	2	2	-
	%	100	95	5	100	92	8	100	100	-
	Ratio		17	1		11	1		1	0
17	Actual	9	4	5	6	2	4	9	6	3
	%	100	44	56	100	33	67			
	Ratio		1	1.3		1	2			
18	Actual	248	211	37	174	141	33	100	67	33
	%	100	85	15	100	81	19			
	Ratio		5.7	1		4.2	1		2	1
Total	Actual	1099	690	409	732	466	266	39	23	16
	%	100	63	37	100	64	36	100	59	41
	Ratio		1.7	1		1.8	1		1.4	1

incumbents in the occupational category or rank, which is to be anticipated. The gender ratio of the accessible population compares favourably with that of the target population for the majority of categories and ranks. The gender ratio of the sample is not as

representative for some occupational categories and ranks, although this is also not unexpected in view of the small sample size. However the direction of the ratio, for example more males than females, is correct in all but Rank 10 of ERO No.2.

It is concluded that despite the fact that the accessible population is only 60.96% of the target population, it is representative in terms of the strata. However, this data clearly does not permit an assessment of whether the sample is biased in the sense that members of an ERO may be more conscious of protecting their rights than nonmembers.

#### 7.3.9 Data collection process

The survey period extended over 6 weeks, having begun on the 25th October, 1991 and ended on the 5th December, 1991. Instruments for 50 respondents were completed and there was no loss of selected subjects. Although it was intended that it be completed more quickly to reduce the likelihood of extraneous variables being introduced, the process was delayed because the interviews could not be conducted during working hours and many of the employees were not able to remain after work as they were dependent on public transport.

Each individual was personally visited in their workplace and requested to participate. In the majority of cases they were aware of the study, due to the permission seeking process that was followed with their EROs. Some of them wished to know more about the form that the interview would take and what would happen to the results. Those who were not aware of the study, were given a full explanation similar to that

contained in the letter included as Annexure 2. All participants were told that they did not have to answer any questions about which they felt uncomfortable. In addition, it was explained that they could leave out any question in the questionnaire that they did not understand or were unsure about until the interview, when the researcher would check the questionnaire and answer any questions.

Once they had agreed to participate, the questionnaire was handed to them and a mutually suitable appointment was made for the interview, at which time the completed questionnaire would be returned. This practice resulted in a 100% response rate to the questionnaire. It was stressed that should the subject later find that this time would be unsuitable, it could easily be changed. This was important to obtain their full co-operation during the interview. A number of individuals did in fact need to change the appointment and in one case four such arrangements were made. The researcher felt that by conveying sensitivity to their position, a relationship of trust was being established with them. This seemed to be their perception when the interview later took place. On average, participants found that the questionnaire took 15 minutes to complete whilst the interview lasted between 30 to 45 minutes. However, some participants wished to discuss health issues that had been identified, in which case the interviews were longer.

Where the participants were not literate, the researcher completed the questionnaire on their behalf, at the interview. Proficiency in English was a problem with four participants, and they each selected an interpreter whom they trusted. In most cases this was

a friend. The researcher was careful to use simple language during these interviews and explained the meaning of more difficult concepts to them. The involvement of more than one interpreter could have introduced extraneous variables. However, it was felt that the use of an unknown interpreter could have exerted a greater negative effect on their willingness to impart confidential information. It would also have contravened the conditions accepted to protect the rights of participants. It was realised that even the use of a selected interpreter could limit or bias the data collected.

In some instances with semi-skilled and unskilled workers, the supervisor was aware that the individual was being approached to participate because they had to be located. However it was felt that this should not influence the subjects' responses regarding aspects related to management and work as, in most of these cases, the supervisor was also a senior member of their ERO. Furthermore, it was understood that the survey was concerned with establishing the health status of individual's. Most members in these categories did not include the dimension of social health in their perception of health status, and knowledge of the link between management style, work and health did not appear to be well known. Consequently, they did not necessarily view the participation of their subordinates as threatening.

The interviews were conducted in a private and comfortable place that was suggested by the participant. Although it had been the researcher's intention to conduct them all in the same place, it soon became evident (as in the pilot study) that this was impractical in view of the wide geographical extent

of the campus. It would have been most inconvenient for many individuals to come to the central office that had been procured for this purpose, and could have discouraged their participation. The disadvantage of the possible inclusion of extraneous variables through the varied localities used for the interviews was offset by the fact that participants were more likely to be relaxed and comfortable in the setting they had selected. Furthermore, it presented the researcher with a valuable opportunity to observe their working environment or relaxation area.

Once the interview had been completed, the physiological and biophysical measurements were made. These were carried out at this stage in the hope that the researcher had established a rapport with the respondent, who should have been more relaxed than at the commencement of the interview. Any abnormal readings were checked twice at intervals of at least one week, to ensure that it was influenced by anxiety in the respondent.

In some cases, when questions pertaining to signs and symptoms were asked (Personal health risks) the researcher used health assessment techniques such as palpation and auscultation to evaluate the significance of those mentioned. However this was only done with the agreement of the respondent.

Elaborate measures to assure participants of the confidentiality and anonymity of the information revealed proved unnecessary. Initially participants were asked to staple their questionnaire and interview together, having checked that their names did not appear on them, and place them in the sealed box which was provided. However, subjects repeatedly stated that



there was no need for this, and the practice was discontinued, although they were still encouraged to check that their names were not on the completed documents.

A number of subjects noted that as a result of their participation they had recognised the link between health and work. Whereas they had not previously felt it necessary that such an organisation have an occupational health programme they had now altered their view. To a large extent, this would have resulted from the health education which was provided for each participant on completion of the interview and questionnaire, based on their particular needs. Where necessary, follow-up of findings was instituted. This included surveillance of raised blood pressure, referral to appropriate health services, and feedback to the ERO on health threats arising out of the workplace. In some cases, the latter issues will then be taken up with management, whilst maintaining confidentiality.

#### 7.3.10 Methodological limitations

There are a number of methodological limitations in the survey that must be borne in mind when evaluating the findings. Although they have been identified in the course of the preceding sections and the reasons for their occurrence explained, they are listed for ease of reference.

(a) The exclusion of individuals who do not belong to a employee representative organisation has introduced a bias into the sample. The seriousness of this is discussed in 7.3.5.2 and 7.3.8.

(b) The exclusion of members of the fourth ERO, although small in number, has also biased the sample.

(c) Certain senior occupational categories, the incumbents of which comprised 3.26% of the accessible population, were excluded to ensure anonymity. This was disappointing as these members may exert considerable influence on others in the organisation, and are themselves more susceptible to certain influences than others.

(d) As a result of the above factors, the population from which the sample was drawn, amounted to only 60.96% of the target population.

(e) Time and ethical constraints, in addition to the quantity of data to be analysed, limited the sample to 5% of the accessible population. A larger sample would have been advantageous, and will certainly be used in future field testing.

(f) The survey extended over a 6 week period, which was longer than desired although not unacceptable. Once again, ethical constraints were largely responsible for this. The interviews were not all conducted at the same time of day, because respondents' individual preferences were considered more important for obtaining their participation and accurate answers. In the main, academic employees were interviewed first to avoid the peak in workload related to end of year examinations.

(g) Language difficulties necessitated the use of an interpreter for four subjects. Although efforts were made to reduce the influence of this third person on the data collected, it was still an inconsistency in

the data collection.

(h) The interviews were conducted in the locality selected by the subject. Although a central office far from the university administration building was available, only three subjects chose to be interviewed there. This was primarily as a result of the great geographical extent of the campus, which made the central office an impractical venue. The researcher felt that it was more important that the interview take place at a venue that was physically and psychologically comfortable, as well as convenient for the respondent.

Despite these limitations, the survey should yield useful data for the evaluation of the model, strategy, and instrument.

#### 7.3.10 Data analysis

Once the data has been captured to form a database, the analysis will be conducted by means of the Statgraphics computerised statistical package. The instrument will yield mainly at the nominal and ordinal data, with some at interval and ratio level. Therefore, both parametric and nonparametric statistics will be used for the analysis.

There will be two main objectives in analysing the data. The first is to produce a broad profile of the organisation to determine the aggregate health status as indicated in

6.4.2.2. and demonstrate how the strategy may be used. This will involve an examination of the selected

variables in this population with regard to their form, prevalence, distribution, and relationships. Therefore, the data will be analysed to produce a description of the population in terms of the variables and to identify associations between these variables. This will be achieved by means of univariate statistical techniques, these being descriptive and inferential statistics. The latter will be used to evaluate the sample representativeness of the population and examine relationships between variables. Multivariate statistical analysis techniques such as multiple regressions, will also be used to investigate these relationships.

The second objective of the data analysis is to refine the model, strategy, and instrument. This will also involve an assessment of the relationships between the variables in the study population and whether they accord with those suggested by the model and the findings of other studies. Efforts will also be made to establish whether additive or interactive relationships that predict events exist between the variables. Finally, the reliability and validity of the instrument will be evaluated, together with its practicality for use by occupational health nurses.

This chapter has described the research methodology of the study. Owing to the nature of the research, the stages in the development and testing of the instrument have been recorded in meticulous detail. This has been necessary for the evaluation of the model and instrument.

## **CHAPTER EIGHT: RESULTS OF THE FIELD TEST**

The purpose of this chapter is to report and discuss the results of the survey findings and so produce a broad profile of the aggregate health status of the organisation. The results will also be examined in order to test and refine the model, strategy and instrument.

### **8.1 An assessment of the aggregate health status of the organisation**

In view of the great number of variables and their inter-relationships, the results will be reported in tabular form and discussed in terms of trends, except where detailed comment is warranted. The variables will be numbered in accordance with their placement on the 'wheel' in Figure 6.5. Schedule One should be consulted for the distribution of items relating to the variables.

The important inter-relationships between variables, as identified in the model of health in the workplace in Chapter Six, will be explored. However, the analysis will not be exhaustive as the possible

number of inter-relationships is extremely large. It is envisaged that the instrument would be used to highlight significant trends in an organisation and that these would be investigated in further detail where warranted. Regular assessments would be required as the patterning of relationships in an organisation would change over time.

As the data were derived from a random sample, probability statistics will be used. The levels of measurement of the data are predominantly nominal and ordinal, although there are a few at interval and ratio level. These levels will obviously determine that statistical measures to be used. One of the important tasks of the analysis will be to determine the extent to which the sample findings can be generalised to the organisation.

Please note that unless otherwise stated, the numbers used hereafter refer to the order of the variables on the 'wheel'.

#### 1. Demographic variables

As explained in Chapter Six (6.4.1), these variables not only indicate the broad characteristics of the members of the organisation but are also used in the examination of most of the other variables. Table 8.1 gives a summary of the distribution of respondents across these variables. Crosstabulations were performed between each of the five variables.



Table 8.1: Distribution of demographic variables

Variable	No of resps	%
Gender		
male	30	60
female	20	40
Total	50	100
Ethnic group		
African	16	32
Indian	8	16
White	26	52
Total	50	100
Age (in years)		
< 18	0	0
18 - 24	1	2
25 - 34	8	16
35 - 44	18	36
45 - 54	13	26
55 - 64	9	18
65 and over	1	2
Total	50	100
Educational status		
< std. 1	4	8
std. 1	0	0
std. 2	0	0
std. 3	2	4
std. 4	1	2
std. 5	0	0
std. 6	6	12
std. 7	0	0
std. 8	3	6
std. 9	3	6
std. 10	5	10
post-matric diploma/cert	12	24
degree	14	28
Total	50	100
Marital status		
single	4	8
single - promised/engaged	2	4
living together, not married	4	8
married and living together	32	64
married but separated	2	4
divorced	4	8
widowed	2	4
Total	50	100

### 1.1 Gender

A detailed analysis of the gender of the sample, its distribution according to academic or non-academic status and occupational rank, and its representativeness was given in Chapter Seven (7.3.7). In summary, 30 males and 20 females participated in the study. Application of the Chi-squared Test for Goodness of Fit (Chi sq) showed that there was no significant difference in the values at the 95% confidence level, so there was no sexual bias in the sample and the difference between the genders in the sample is representative of the population.

### 1.2 Ethnic group

Historically, the university was reserved as an educational organisation for White people and the admission of other race groups was controlled. It was only in recent years that these restrictions have been relaxed and a policy of equal opportunity and affirmative action instituted. Consequently, in relation to South African population figures, there is a disproportionate number of White as opposed to African and Indian employees. This was confirmed when the Chi-squared value was found to be  $-9.43702E-3$  at  $p = 0.5$ , demonstrating that there was a significant statistical difference in the values for ethnic group. It could not have been due to chance.

White women represented 65% of women respondents, whilst White men constituted 43% of men sampled. By contrast, 23% of the men were Indian, against 5% of the women. African men represented 33% and women 30% of those sampled.

### 1.3 Age

A barchart of the age distribution (Figure 8.1) shows clearly that the greatest number of respondents (36%) fell between the age of 35 to 44 years, followed by the second largest group (26%) which are between 45 to 54 years. Women and men tended to be equally distributed across the categories, as was the case for ethnic grouping. The Chi-squared test yielded a value of  $p = 3.63988E-5$ , demonstrating that the values for age distribution could not have been due to chance, and therefore there is a significant difference in them.

### 1.4 Educational status

The distribution shows that educational status varied in the organisation. To apply the Chi-squared test, categories were pooled to ensure that cells did not have values lower than 2. The new categories were: less than and equal to Std. 6, Std. 7 to Std. 8, Std. 9, Std. 10, certificate/diploma and degree. The resultant probability was 0.0156094, and it was concluded that the difference in values was not due to chance and they could be generalised to the population.

The scattered distribution of respondents' educational status becomes clearer when ethnic grouping is taken into account. White respondents all had a minimum of standard 10. Of these, 15% had standard 10, 39% had a post-matriculation diploma or certificate and 46% had a university degree. In contrast, 25% of African respondents had less than standard 1 and 35% had only passed standard 6, thus reflecting a country-wide trend. There was no marked pattern in the educational status of Indian respondents.

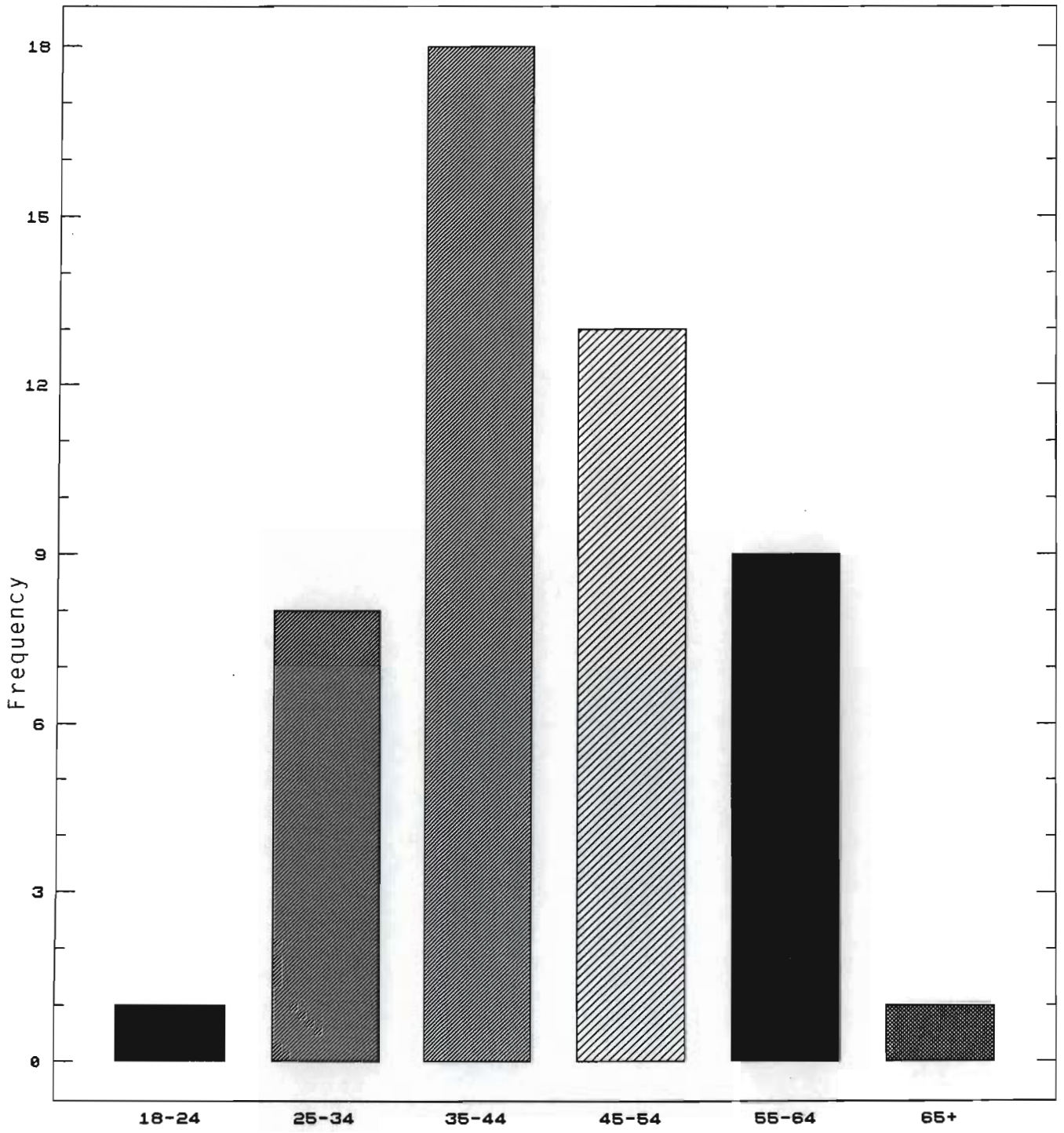


Figure 8.1: Barchart showing the ages of respondents in years

Respondents with a secondary or tertiary education tended to be in the 35 to 44 year age group (42%) and 45 to 54 year age group (27%). There was no clear trend with respect to gender.

### 1.5 Marital status

By far the majority of respondents (64%) were married and living together. Amongst White respondents, 8% were separated and 15% were divorced, whereas there were no African and Indian respondents in these categories. Furthermore, 11.5% of Whites were living together and not married compared to 6% of Africans and no Indians.

When the ages of respondents were considered with respect to marital status, it was found that 75% of those living together and not married were between 35 and 44 years, whilst those married and living together mostly fell between the ages of 35 and 64 years.

Of the married respondents, 50% had a secondary or tertiary educational qualification. This is to be expected, given that most respondents were White and most Whites had a higher educational status than other groups.

Regarding gender, 75% of respondents that were married and living together were men and 50% were women. All the separated, divorced and widowed respondents were women, representing 40% of the total number of women.

The marriage rate for the sample was 68%, whilst the divorce rate was 8% which seems low when compared to national rates (Van Rensburg et al, 1992).

When the Chi-squared test was applied, no statistically significant difference at the  $p = 0.05$  level could be established. Therefore, it was concluded that the difference in values for marital status was due to chance.

None of the respondents had more than one wife at the time of the survey.

## 2. Residential variables

The form, prevalence and distribution of these variables was examined with the objective of establishing their influence on the health of members, as an indication of the communities they live in, as well as that in which the organisation is situated, and to identify the influence of the organisation upon these variables.

### 2.1 Area

#### 2.1.1 Socio-economic level

The areas in which respondents lived were related to their income and ethnic group, in the latter case as a result of government racial segregation policies. Although these were being removed at the time of the survey, only two of the respondents (Africans) had moved into areas typically reserved for another group, these being Overport and the central business district.

Table 8.2 shows the areas where respondents



reside. Areas with higher property values included the

Table 8.2: Frequency tabulation of home address

Address during week	No of resps	Address during week	No of resps
Berea	3	Manor Gardens	3
Bluff	1	Mobeni	3
CBD	2	Morningside	1
Carrington Heights	1	Newlands West	1
Chatsworth	3	Overport	1
Durban North	1	Phoenix	2
Gillits	1	Pinetown	4
Glenwood	4	Queensburgh	1
Hillcrest	2	Shallcross	2
Inanda	1	Umbilo	3
KwaMashu	2	Umkomaas	1
Lamontville	1	Umlazi	6
Total	22	Total	28
Grand total			50

Berea, Durban North, Gillits, Glenwood, Hillcrest and Manor Gardens, all of which were mostly populated by Whites. The Bluff, Carrington Heights, Morningside, Overport, Pinetown, Queensburgh and Umkomaas have areas within them where houses vary between being expensive and fairly cheap. Whites are the predominant group, except for the Bluff, Overport, Pinetown and Umkomaas which have areas reserved for different groups within them. Generally, residential property prices are lower

in the CBD and Mobeni, and people of different groups reside together. In the remaining areas, lower socio-economic housing was developed for Indians and Africans. However as some residents have become more affluent they have built more expensive homes so that prices vary within these areas. Residents of Chatsworth, Newlands West, Phoenix, and Shallcross are mostly Indians, whilst Africans are the predominant group in Inanda, Lamontville, and Umlazi.

#### 2.1.2 Proximity to workplace

The map in Figure 8.2 indicates the proximity of respondents' area of residence to the workplace, which is situated in Glenwood and the greater Durban area (marked with an X on the map). The areas from which the migrant workers come, appear in Table 8.3. Most of these respondents visited home at month end, after payday.

Table 8.3: Frequency tabulation of home address for migrant workers

Home address (migrant workers)	No of resps	Home address (migrant workers)	No of resps
Cape Town	1	Ndwedwe	1
Greytown	2	Umlazi	1
Izingolweni	1	Zululand	1
Mapumulo	1		
Total	5	Total	3
Grand total			8



suburbs during the week

It can be seen that 16% of respondents live in suburbs adjacent to the organisation. The rest are scattered over a wide area further afield and therefore it is not a major employer in the area. The implications of these findings for travel, economic status and length of workday will be considered in 2.4, 2.6 and 3.2.4 respectively.

## 2.2 Accomodation

Questions from this section of the instrument, with the exception of type and construction of living quarters, were not administered to respondents who belonged to Employee Representative Organisations (ERO) 1 and 2, as they held a higher occupational rank than the 19 ERO 3 respondents and therefore earned higher incomes. Coupled with the fact that the researcher was familiar with their areas of residence, the economic level and the quality of accomodation, it was felt that further investigation was unnecessary.

Respondents who were migrant workers were asked about their accomodation during the working week.

Table 8.4 gives a summary of the findings for this section.

### 2.2.1 Ownership

Nine of the 19 respondents questioned did not own the accomodation they were living in. Four of these were migrant workers who had homes in rural areas. However, it is interesting to note that 10 of them either fully or partially owned their residences. Considering that they were all African or Indian, this

reflects a recent trend towards increased home

Table 8.4: Frequency tabulations for items relating to accomodation

Item	No of resps	%
Ownership		
owned, fully paid	5	26
owned, partly paid	5	26
rented	7	37
other	2	11
Total	19	100
Type		
whole detached house	39	78
semi-detached/cluster house	3	6
flat	3	6
outhouse/garage	1	2
hostel	4	8
Total	50	100
Size (no. of rooms)		
1	4	21
2	1	5
3	0	0
4	3	16
5	4	21
6	4	21
7	2	11
8	0	0
9	1	5
Total	19	100
Occupancy		
1	1	5
2	2	11
3	2	11
4	7	36
5	2	11
6	3	16
7	0	0
8	0	0
9	0	0
10	1	5
11	0	0
12	1	5
Total	19	100

ownership amongst this sector of the population. The university does offer a housing subsidy to permanent staff who are the main earners in a family and a few of these respondents mentioned that they received such assistance.

#### 2.2.2 Type

The majority of respondents (78%) lived in whole detached houses, and of these 58% were in the higher occupational status categories. Of the 16% who lived in either a flat, outhouse/garage or hostel, 12% were members of ERO 3 and were in the lower income scales of the organisation. These results are a clear indication of the effect of income on quality of life, especially when the residential areas they lived in were taken into account.

#### 2.2.3 Construction

All the homes had concrete floors, usually with a vinyl covering. The walls were constructed from either bricks (64%) or blocks (36%), and the roofs were tile (58%) or asbestos sheeting (42%). Therefore, they were all of a sound construction, although the health effects of asbestos sheeting for roofs is cause for increasing concern amongst health workers.

#### 2.2.4 Size

Discounting respondents who lived in an outhouse/garage or hostel, most of their residences had between 4 and 6 rooms.

#### 2.2.5 Occupancy

Occupancy ranged between one and twelve residents in a dwelling (or room in the case of hostel-dwellers).



The mode was four occupants.

Crosstabulations between occupancy and ethnic group and occupational status revealed that 26% of those interviewed had four occupants and were African and that the higher the occupancy rate was, the lower the occupational status of the respondent would be. The hostel-dwellers shared a room with three or four other people.

### 2.3 Basic services

Table 8.5 provides a summary of the results. Most of the respondents live in well serviced areas, being in formal urban or peri-urban settlements. Those who had less sophisticated services were in the lower income categories, all being Africans. However, the small number of respondents who were thus affected was evidence of efforts by local authorities to improve services to residences.

#### 2.3.1 Water supply

Only one respondent (who lived in Inanda) relied on unpurified water and two did not have water piped to their homes. Therefore, very few of the occupants would have needed to spend time fetching water.

#### 2.3.2 Energy supply

Most respondents (96%) had electricity in their homes. However, five of them used gas or paraffin for cooking as it was a cheaper energy supply.

#### 2.3.3 Sewage disposal

Most had a community system, except for one in Inanda, who had a pit privy, whilst another who used a chemical toilet was expecting her home to be linked

into the waterborne sewage system within months.

Table 8.5: Frequency tabulations for basic services to residences

Item	No of resps	%
Water		
river/stream/dam/spring	1	2
community tap/tanker	1	2
piped from community purification plant	48	96
Total	50	100
Energy - heating		
electricity	47	96
gas	1	2
paraffin	2	4
Total	50	100
Energy - cooking		
electricity	42	84
gas	2	4
paraffin	6	16
Total	50	100
Energy - lighting		
electricity	47	94
candle	3	6
Total	50	100
Sewage disposal		
private pit privy	1	2
septic tank and French drain	4	8
chemical toilet	1	2
waterborne sewage system	44	88
Total	50	100
Refuse disposal		
incineration	1	2
community refuse collection system	49	98
Total	50	100

#### 2.3.4 Refuse/waste disposal

The Inanda resident incinerated her refuse as there was no communal service. The remainder of the respondents' homes were serviced by a community refuse collection system.

#### 2.3.5 Food

The 4 hostel dwellers were asked about their preparation, cooking and storage of their food. Two of them cooked their main meal at midday at work, pooling their food with other workers. The others cooked for themselves in their hostel room, but not on every night. Three of them lived on a diet of cabbage, beans, samp, mealie-meal, tinned fish and bread. However, one of them consumed only a small quantity of food every day, and this did not always include protein, because he was supporting a number of other people. In all cases, their first food intake of the day was at 10h00, which is very late.

None of them had access to a fridge at the hostel, and if they cooked they had to eat the food that night or the following morning. They stored their food in a cupboard in their rooms, where it was safe. The purchase of food was often difficult as they could not get to shops where goods were cheaper during the working week.

The nutritional implications of these findings were of concern. These men were often too tired to cook, and did not understand the need or were able to afford to have a balanced diet. The effect of poor nutrition on work performance is well documented. Therefore, a subsidised feeding scheme for the lower

income categories of workers should be investigated. It is possible that this food could come from the kitchen that supplies the residences.

#### 2.3.6 Laundry

All the hostel-dwellers did their own laundry. Three of them could only wash and iron on a Sunday, as they had to watch that their clothes were not stolen whilst they were drying. One of them washed clothes at work during the week. It was concluded that their laundry facilities were inadequate. Three of them were labourers, who wore boots for work and would need to have clean socks daily to prevent tinea infections.

The supply of basic services was found to be adequate for most respondents. However, basic services for the rural residences of migrant workers were not as good. Most of them obtained water from a river/stream/dam/spring or community tap/tanker. Pit privies were most commonly used, refuse was either incinerated or burned and energy supply was gas, paraffin or wood for heating and cooking, and candle or paraffin for lighting.

This situation has definite health implications for the individual respondents themselves as well as for other members of the organisation. In particular, they would have a greater risk of contracting communicable diseases than respondents living with more sophisticated services. Returning to work with such infections, then places other members at risk if personal hygiene standards are not good.

#### Evaluation of living quarters

The quality of respondents' living quarters was

evaluated, based on the type, construction, occupancy, area and basic services (see Table 8.6). The rating was assigned according to the combination of categories. For example, the construction of a hostel could have met the qualities of adequate and good housing, but they are overcrowded, with poor and aesthetically unpleasing facilities and were therefore judged as inadequate. The results were as follows: 44% lived in good living quarters, 44% in adequate living quarters and 12% in inadequate living quarters. This rating was then crosstabulated with ethnic group, income and occupational status.

The quality of living quarters amongst Africans was adequate for 63% and inadequate for 37%; for Indians it was good for 25% and adequate for 75%; and for Whites it was good for 77% and adequate for 23%. In view of the ethnic pattern of occupational status and income groups in this organisation, plus the effects of the Group Areas Act, the picture is as would be expected. An analysis of the occupational status supported this. The respondents living in inadequate quarters were either partly skilled or unskilled. Amongst skilled manual and non-manual, quality of living quarters was predominantly adequate, whilst professional and intermediate respondents had good living quarters in the main (over 80% for each category). It is evident that the inclusion of housing in the estimation of socio-economic status is justifiable.

## 2.4 Transport

Frequency tabulations and crosstabulations for mode of transport, cost and time were performed (Table 8.7).

Table 8.6: Rating scale for the evaluation of living quarters

Rating	Type	Construction	Occupancy	Basic Services	Area
Good	Whole detached house Semi-detached house Flat	Precast cement/brick and tile/asbestos/corrogated iron Evaluate according to waterproof, drainage, fireproof, ventilation, ability to withstand wind etc, qualities being good	No more than 2 people/room (Children if mixed gender must be under 10 years) Ablution and cooking facilities inside dwelling	Water - piped to dwelling for comm. plant/private well or borehole, reservoir etc. but piped to dwelling after purification Energy - solar, gas, electricity Sewage - waterborne, septic tank and French drain/conservancy tank Refuse - community collection system	Gillits, Hillcrest, Pinetown (some areas), Glenwood, Manor Gardens, Durban North, Berea (some areas) and Morningside (some areas)
Adequate	Whole detached house Semi-detached house Flat Residential hotel/rented room	As above, but average qualities	No more than 3 children/room (if mixed gender, must be under 10 years); or 2 adults/room	Water - piped from comm. or private purification/untreated piped to dwelling and then purified Energy - gas, electricity, biofuel for heating/cooking Lighting - adequate supply Sewage - waterborne/septic tank and French drain/conservancy tank Refuse - comm collection/burial if on a farm	Pinetown, Berea, Morningside, Queensburgh, Bluff, CBD, Umbilo, Shallcross, Newlands West, Overport, Moberi, KwaMashu, Umlazi/Lamontville All depending on areas as they vary
Inadequate	Flat Rented room Outhouse/garage Hostel Shack/hut	Wood/plastic/mud etc. As above but inadequate	More than: 3 children/room of mixed gender: and/or 2 adults/room	Water - river/stream/dam/spring/comm. tap or tanker/comm. well/borehole Energy - wood/paraffin/gas/candle/coal/anthracite/battery/dung Sewage - pit privy/pail system/chemical toilet/communal toilets	Parts of areas mentioned in adequate category



Table 8.7: Crosstabulation of mode of transport by cost and time to travel

Category	Mode of transport											Tot
	1	2	3	4	5	6	7	8	9	10	11	
Cost												
<R5	1	0	7	0	0	0	0	0	0	0	0	8
R 5-R 9	0	0	2	0	0	2	0	6	0	0	0	10
R10-R19	0	2	5	2	2	1	0	1	0	0	2	15
R20-R29	0	0	7	0	2	0	0	0	2	0	0	11
R30-R39	0	0	3	0	0	0	1	0	0	1	0	5
R40-R49	0	0	0	0	0	0	0	0	0	0	0	0
R50-R59	0	0	1	0	0	0	0	0	0	0	0	1
Total	1	2	25	2	4	3	1	7	2	1	2	50
Time in (min)												
0- 29	1	2	16	0	0	0	0	0	0	0	0	19
30- 59	0	0	9	2	0	1	0	3	0	0	0	15
60- 89	0	0	0	0	2	0	1	0	1	0	0	4
90-119	0	0	0	0	2	2	0	4	1	0	2	11
120 +	0	0	0	0	0	0	0	0	0	1	0	1
Total	1	2	25	2	4	3	1	7	2	1	2	50

Key to modes of transport:

- |                              |                     |
|------------------------------|---------------------|
| 1 - bicycle                  | 7 - walk and bus    |
| 2 - motorcycle/moped/scooter | 8 - walk and train  |
| 3 - own motor vehicle        | 9 - taxi and bus    |
| 4 - private lift club        | 10 - bus and train  |
| 5 - bus                      | 11 - taxi and train |
| 6 - train                    |                     |

#### 2.4.1 Mode

Many respondents used a combination of modes, hence the increased number of categories. The most common means of transport was the respondent's own private motor vehicle (50%), followed by the train (26%) and then the bus (16%). Only 8% used a taxi, and these were respondents who lived further from the university, for example in Inanda.

Those people using their own motor vehicles fell into the higher occupational status categories and were mostly White (88%). Conversely, no Whites used public transport. Interestingly, seven White respondents lived within walking distance of the university, in Glenwood or Manor gardens, despite this only one cycled to work and the rest used their private cars or bicycle. However, 5 of them said they felt they needed more exercise and that lack of time prevented them from obtaining it.

A crosstabulation between weekly address and mode of transport showed that people living in KwaMashu, Lamontville, Newlands West, Phoenix, Shallcross and Umlazi almost all used some form of public transport. As has been stated, Africans and Indians lived in these areas and because they generally belonged to the lower income and occupational status categories of the organisation, it is obvious that they would be far less likely to afford their own means of private transport.

#### 2.4.2 Cost

The weekly cost of transport was worked out for respondents, and although the mean cost was R15-50, the standard deviation (S.D.) was 11.58, thus demonstrating great variation.

Cost was related to distance travelled, however variations tended to be more marked for those using their own private motor car. Train fares ranged between R5-00 and R19-00 per week whereas bus fares ranged between R10-00 and R39-00 per week. Considering that the respondents using public transport were in lower income groups, it was evident that travel costs for these people formed a larger proportion of their budget in comparison to those in higher income

categories. To support this, an analysis showed that most of the respondents (95%) who were in the Occupational ranks 14 to 18, in other words the lower income groups, spent between R5-00 and R29-00 per week on travelling. Taking a midpoint between remuneration scales and travel costs for this group, it was found that they used 6% of their budget on travelling. In contrast, most of the academic respondents between the ranks of 301 and 321 spent less than R20-00 per week on travel, representing only 0.2% of their budget.

#### 2.4.3 Time

Time to travel was also related to distance travelled, but more especially to mode of transport. Respondents with their own motor vehicles, motor cycle/moped/scooter or in a private lift club usually took less than 30 minutes (36%) or less than one hour (22%) to travel to work. Respondents who took between one and two hours (32%) used public transport. In many cases the distances travelled were similar.

The mean time for travel was 30-59 minutes, and the S.D. was one category, again showing that there was a great variation in travel time for respondents.

### 2.5 Social support

This was difficult to establish directly.

#### 2.5.1 Family

Thirty-nine respondents answered the question regarding spouse support for workload. Of these, 32 felt that their spouse was supportive and tolerant of their workload, 6 felt that their spouse was tolerant but not supportive and 1 stated that her spouse was intolerant. The Chi-squared test produced a p of

1.30269E-8, demonstrating that the results were not due to chance and that there was a significant difference in the values.

In most cases, assistance with home responsibilities and understanding of the respondents' work responsibilities was perceived as support. It was concluded that most spouses were supportive, which is regarded as a great help for a working member of a family. Spouses who were perceived merely tolerant, either found it difficult to understand why the respondent worked so hard or did not object as long as they were not directly affected, for example by having to care for the children. The majority of spouses who were not supportive were men, which is consistent with other studies on working women.

When respondents were asked who helped them to decide what to do about a health problem experienced in the previous two weeks, 6 of the 19 reported that their spouse helped. Three respondents said their spouse had advised them to take an over-the-counter medication in the last two weeks.

An analysis of the leisure activities of respondents showed that many of them spent time with family members. For example, childrearing, holiday trips away together and walking (three of them specifically mentioned going with a spouse or child). This could be regarded as an indication of family cohesion and respondents in this situation would be expected to have supportive family relationships. However, the extent was not investigated further.

### 2.5.2 Friends

No specific question was formulated for this area. However, the comments under 2.5.3 are pertinent.

### 2.5.3 Other

One respondent reported that a work colleague had advised him to take some paracetamol for a health problem in the previous two weeks. This indicated some support from a non-family member.

When respondents leisure activities were examined, a wide range emerged (see 4.4.6). They were determined by access to resources and cultural and gender factors largely. It was evident from Table 8.51 that many of the respondents had active social lives and regarded this as aspect of life as important. It follows that they would derive social support in the course of these pursuits, but no attempt was made to quantify this.

Although respondents were asked who they went to for help when they were not well, none of them mentioned anyone else besides a health care practitioner of some type. Therefore, no indication of the lay referral system was established.

## 2.6 Economic factors

### 2.6.1 Dependents

The average number of financial dependents for respondents was one partly dependent and two fully dependent, bringing the average total number to three dependents (Table 8.8). The S.D. was 2.39 for the total number of dependents, indicating that there was a fairly large variation in the sample.

Table 8.8: Frequency tabulations for financial dependants

No. of depend.	Partial depend.	%	Full depend.	%	Total depend.	%
0	26	52	19	38	8	16
1	10	20	6	12	5	10
2	9	18	7	14	9	18
3	2	4	10	20	14	28
4	1	2	3	6	3	6
5	1	2	2	4	6	12
6	0	0	0	0	0	0
7	0	0	1	2	2	4
8	0	0	0	0	0	0
9	0	0	2	4	2	4
10	1	2	0	0	1	2
Total	50	100	50	100	50	100

Key: depend. - dependants

A crosstabulation of the number of dependents with ethnic group showed that African respondents had the highest number of financial dependents, 31% had a total of five and a further 31% more than five dependents (Table 8.9). All of them were supporting children, 50% were helping a spouse and/or parent and 31% were assisting extended family members. These same respondents were also in the lower income groups.

In contrast, the mode for Indian respondents was a total number of three dependents. White respondents had the least number of financial dependents - 27% had none and 35% had three. None of them had more than four dependents. In all cases the dependents were children, a spouse or an ageing parent.



Table 8.9: Crosstabulation of total number of financial dependents by gender, ethnic group and marital, and occupational status

Variable	0	1	2	3	4	5	6	7	8	9	10	Tot
Gender												
male	4	4	3	8	2	5	0	2	0	2	0	30
female	4	1	6	6	1	1	0	0	0	0	1	20
Total	8	5	9	14	3	6	0	2	0	2	1	50
Ethnic group												
African	0	0	2	2	2	5	0	2	0	2	1	16
Indian	1	1	2	3	0	1	0	0	0	0	0	8
White	7	4	5	9	1	0	0	0	0	0	0	26
Total	8	5	9	14	3	6	0	2	0	2	1	50
Marital status												
1	1	0	0	0	1	2	0	0	0	0	0	4
2	0	0	0	1	0	0	0	1	0	0	0	2
3	2	1	0	1	0	0	0	0	0	0	0	4
4	4	3	6	10	1	4	0	1	0	2	1	32
5	0	1	0	1	0	0	0	0	0	0	0	2
6	1	0	2	1	0	0	0	0	0	0	0	4
7	0	0	1	0	1	0	0	0	0	0	0	2
Total	8	5	9	14	3	6	0	2	0	2	1	50
Occupational status												
professional	3	1	2	4	1	1	0	0	0	0	0	12
intermediate	1	1	2	3	0	0	0	0	0	0	0	7
skilled	3	2	2	3	1	1	0	0	0	2	0	14
non-manual												
skilled	0	0	0	1	0	0	0	0	0	0	0	1
manual												
partly	0	1	3	1	0	1	0	1	0	0	0	7
skilled												
unskilled	1	0	0	2	1	3	0	1	0	0	1	9
Total	8	5	9	14	3	6	0	2	0	2	1	15

Key for marital status categories:

- |                                  |                           |
|----------------------------------|---------------------------|
| 1 - single                       | 5 - married but separated |
| 2 - single - promised/engaged    | 6 - divorced              |
| 3 - living together, not married | 7 - widowed               |
| 4 - married and living together  |                           |

With regard to gender (Table 8.10), 4% of men were fully or partly supporting 3 to 5 people whereas 60% of women were supporting 2 to 3 people to some extent. One African woman had 10 partial dependents, who consisted of children and grandchildren. These rates are not as high as found in some organisations and communities, and so the economic implications of financial dependents on health status is not likely to be very marked.

When marital status was considered, it was found that respondents who were married and living together had the most financial dependents. However, amongst the Africans in particular, there were a number of single or engaged (not living together) respondents who were supporting children, parents and extended family members. This is a reflection of cultural practices, such as having a child before a marriage is formalised, and the prevailing high rate of unemployment amongst unskilled, low educational status people.

An analysis of the number of children that respondents had revealed that the mean number was 2.8, with the mode being 2. The S.D. was 1.82.

Most women (65%) had between 2 and 3 children, whilst men varied between 0 and 5, with 27% having 2 children. This greater variation for men was confirmed when it was found that the mean number of children for women was 2.65 and the S.D. was 1.57, whereas the mean for men was 2.83 and the S.D. was 2.

As with financial dependents, respondents who were married and living together had the most children, but 20% of unmarried respondents also had children.

Table 8.10: Crosstabulation of number of children by gender, ethnic group and marital, educational and occupational status

Variable	0	1	2	3	4	5	6	7	8	Tot
Gender										
male	4	3	8	5	4	4	0	1	1	30
female	2	1	7	6	2	0	2	0	0	20
Total	6	4	15	11	6	4	2	1	1	50
Ethnic group										
African	0	2	3	4	3	1	2	0	1	16
Indian	1	0	2	1	2	1	0	1	0	8
White	5	2	10	6	1	2	0	0	0	26
Total	6	4	15	11	6	4	2	1	1	50
Marital status										
1	1	1	0	1	1	0	0	0	0	4
2	0	0	0	1	1	0	0	0	0	2
3	2	0	0	2	0	0	0	0	0	4
4	2	3	13	4	3	4	1	1	1	32
5	1	0	0	1	0	0	0	0	0	2
6	0	0	2	1	1	0	0	0	0	4
7	0	0	0	1	0	0	1	0	0	2
Total	6	4	15	11	6	4	2	1	1	50
Educational status										
<std. 1	0	0	2	1	0	0	1	0	0	4
std. 1	0	0	0	0	0	0	0	0	0	0
std. 2	0	0	0	0	0	0	0	0	0	0
std. 3	0	0	0	0	1	1	0	0	0	2
std. 4	0	0	0	1	0	0	0	0	0	1
std. 5	0	0	0	0	0	0	0	0	0	0
std. 6	0	1	0	1	2	0	1	1	0	6
std. 7	0	0	0	0	0	0	0	0	0	0
std. 8	0	0	0	1	2	0	0	0	0	3
std. 9	1	0	1	0	0	1	0	0	0	3
std. 10	0	0	1	3	0	0	0	0	0	5
dip./cert.	2	3	6	1	0	0	0	0	0	12
degree	3	0	5	3	1	2	0	0	0	14
Total	6	4	15	11	6	4	2	1	1	50
Occupational status										
professional	3	0	3	3	1	2	0	0	0	12
intermediate	1	2	4	0	0	0	0	0	0	7
skilled	1	1	4	4	2	1	0	0	1	14
non-manual										
skilled	0	0	1	0	0	0	0	0	0	1
manual										
partly	0	1	1	3	1	0	0	1	0	7
skilled										
unskilled	1	0	2	1	2	1	2	0	0	9
Total	6	4	15	11	6	4	2	1	1	50

Key for marital status categories: see Table 8.9

The number of children also varied according to ethnic group, with 69% of Africans as opposed to 34% of Whites having 3 or more children. Whites most commonly had 2 children. The number for Indian respondents ranged between 2 and 5 children, except for one young man who had no children. Amongst Africans the mean was 3.56 and the S.D. was 1.93, for Whites the mean was 2 and the S.D was 1.41, whilst the mean for Indians was 3.38 and the S.D. was 2.13. Therefore, White respondents varied the least in the number of children they had.

When the number of children was examined in relation to educational and occupational status, it was evident that those in the higher categories tended to have smaller families. However, there were 3 exceptions where professional or intermediate respondents had 5 or more children. These were men and it is possible that their wives would have fallen into lower categories or it could have been due religious beliefs (Catholics). However, this is speculation.

Figure 8.3 shows a three dimensional histogram of respondents age by number of children. It is clear that the mode is 3 children and that the most respondents with this number are between 35 and 44 years of age. The figure also demonstrates that the younger respondents tended to have less children. In general, the size of families amongst respondents was not considered to be excessively large.

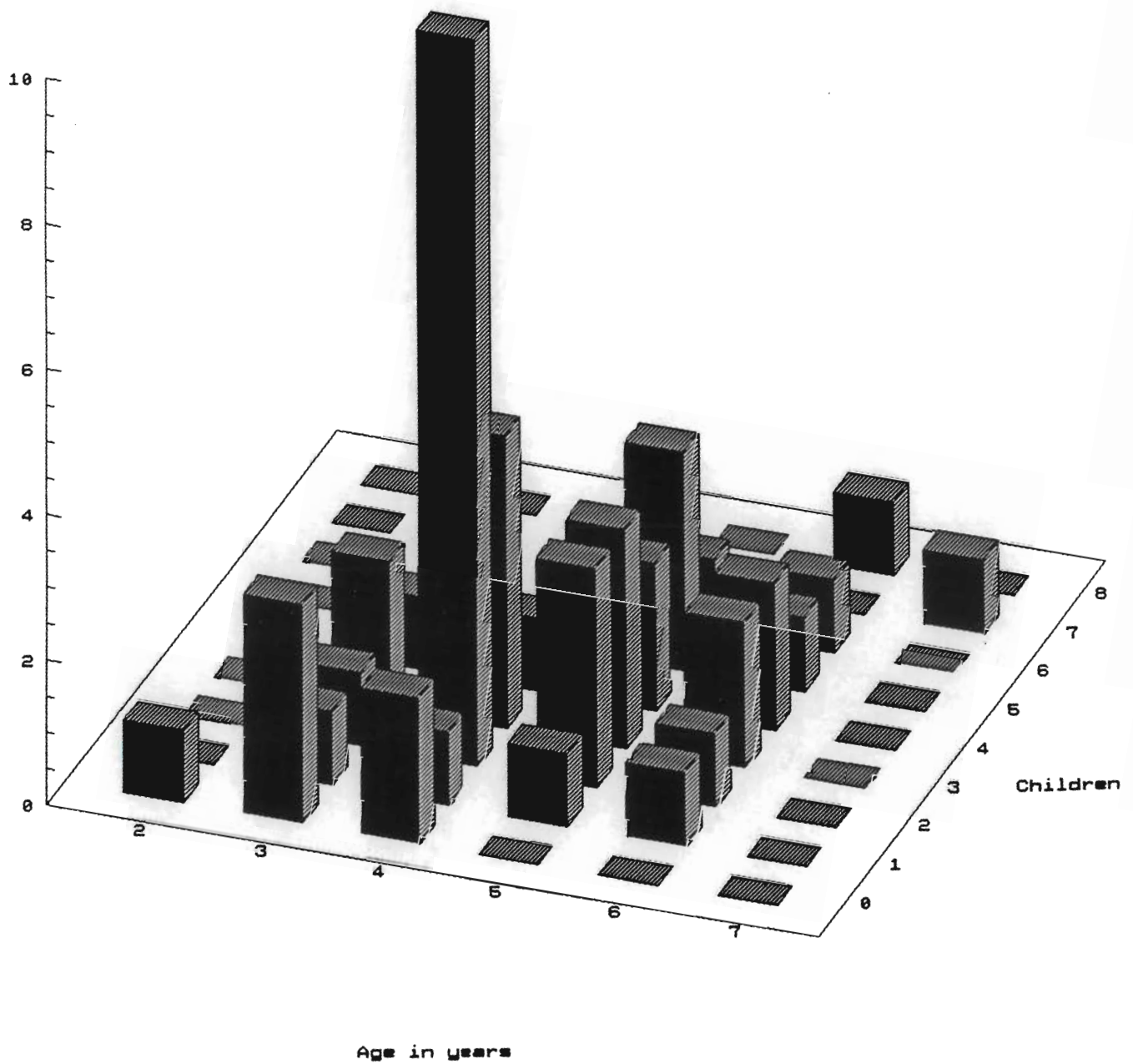


Figure 8.3: Three-dimensional histogram of age by number of children

### Socio-economic status:

In various places in the literature review (3.4.2.1, 5.3.1.1. and 5.3.1.2), the need to recognise the association between occupational status, income and quality of living quarters in determining socio-economic status, is noted. When a multiple regression was performed on the study data, the R-squared value was found to be 0.89 (with  $p = .0007$ ), indicting a strong positive relationship between the three variables. This is to be expected, as an individual's occupational status generally determines his or her income, which in turn influences the quality of their housing.

#### 2.6.2 Cost of living

The Household Subsistence Level (HSL) for a family of five members living in Durban at the time of the survey was R655.85 p.m. (R7870.20 p.a.) for Africans, and R889.88 p.m. (R10 678,56 p.a) for Indians (Potgieter, 1991). According to the data on the number of children and the number of financial dependents, most respondents had a family of five members.

When remuneration rates for respondents were assessed in relation to the HSL, it was found that the lowest level of the scale for Rank 18 was R8 736 per annum, which covers the HSL for Africans but not for Indians. For an African family of seven, the HSL was R743.50 p.m. (R8 922 p.a.) and the wage would therefore be inadequate. (The HSL for an Indian family of seven were not available.) The scale increases to R12 888 which would have provided sufficient income at the HSL for both groups.



However, being a subsistence measure, the HSL only includes the costs of a basic diet, rent and transport. Therefore, a person would need to earn substantially more to provide for a better standard of living and it is proposed that the scales for the lower ranks would not be adequate for this.

As found in the literature survey, the migrant workers in the organisation were in the lower occupational status and income categories. Their living conditions were inferior, both in the city and in their rural homes. The implications are that valuable time and energy will be spent by family members on fetching water and wood, rather than on other more fruitful economic endeavours that could alleviate the burden on the employed member.

Brief overview of the community in which the workplace was situated

Although this would usually be the last part of the strategy, it is necessary to include it here to provide background information on the community within which the organisation is situated.

The university itself, as already indicated was situated in Glenwood. This was an attractive residential suburb of Durban, where the houses ranged in value between fairly to very expensive and were rated as good quality living quarters. These dwellings were predominantly houses or blocks of flats. It was mainly inhabited by Whites. Although there were no factories in Glenwood, it bordered on Umbilo and Mobeni where there were a number of industries.

There was a large provincial teaching hospital that treated Africans and Indians, and was used by medical school students for practical experience. In addition, there were two other private hospitals that treated private patients belonging to all ethnic groups. A number of private general practitioners and specialists operated practices from offices attached to these.

Shops were easily accessible for people with private transport, but others would have had to at least a ten minute walk to reach some of the smaller ones. Buses and taxis stopped down the hill from the organisation and respondents using these walked the last part of the journey - again at least a ten minute walk. The closest train station was about a 15 minute walk from the workplace. There were a number of schools at primary and secondary level nearby, mostly for White children.

Communication systems were good in this community, with most houses having telephones, televisions and access to daily newspapers. Roads were of a good quality, but traffic flow was very heavy, especially at peak hour.

The Durban municipality constituted the local government, with members of the Durban City Council being elected from each of the suburbs of Durban.

### 3. Work variables

The work variables were examined in order to assess the organisational characteristics and functioning, as well as to establish the extent to which it acted as a health strengthening field.

#### 3.1 Status

##### 3.1.1 Occupational category

Table 8.11 provides an analysis of the variables relating to members' status in the organisation. Occupational rank was used in the sample selection, so that the number of respondents in the different ranks was proportionate to the organisation as a whole. The gender ratio in these is shown in the stacked barchart in Figure 8.4. The dominance in number of males over females in both academic and non-academic posts is clear and especially in the more senior categories (i.e. 8, 9, 10, 321 and 331).

When appointment type was examined, it was found that all but one of the respondents were permanent as opposed to temporary employees, 49 were employed in full-time positions and 1 worked part-time, in the morning. The implications of appointment type for conditions of service will be considered under 3.6.1.

Respondents were classified for the type of work they performed, which was assessed according to their occupational rank and title together with the description of the nature of their work (3.2.2). This information was then used to allocate employees to occupational status categories. The barchart in Figure 8.5 shows the distribution of members across these

Table 8.11: Frequency tabulation of items relating to work status

Item	No of resps	%
Occupational rank (in order of seniority)		
8 - non-academic	2	4
9 - " "	3	6
10 - " "	3	6
11 - " "	4	8
12 - " "	5	10
13 - " "	4	8
14 - " "	3	6
15 - " "	4	8
16 - " "	2	4
18 - " "	9	18
Subtotal	39	78
331 - academic	3	6
321 - " "	5	10
311 - " "	1	2
301 - " "	2	4
Subtotal	11	22
Total	50	100
Appointment - permanent/temporary		
permanent	49	98
temporary	1	2
Total	50	100
Appointment - full-time/part-time		
full-time	49	98
part-time	1	2
Total	50	100
Type of work		
management	3	6
academic	11	22
computer specialised services	2	4
administrative/clerical	12	24
technical	6	12
security/traffic officer	1	2
messenger duties	1	2
cleaning	8	16
gardening	6	12
Total	50	100
Occupational status		
professional	12	24
intermediate	7	14
skilled non-manual	14	28
skilled manual	1	2
partly skilled	7	14
unskilled	9	18
Total	50	100

Male  
Female

399

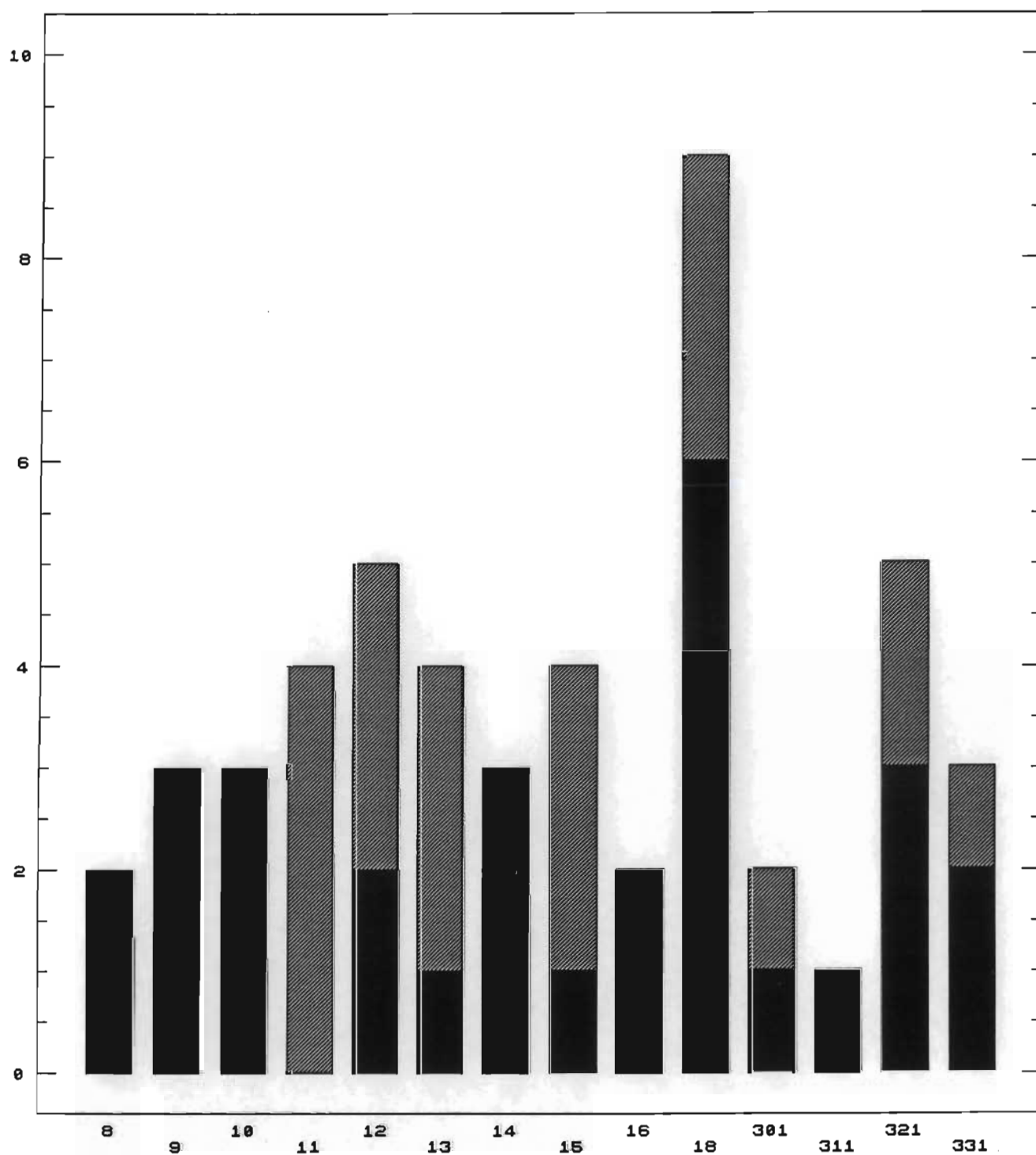


Figure 8.4: Stacked barchart of occupational rank by gender

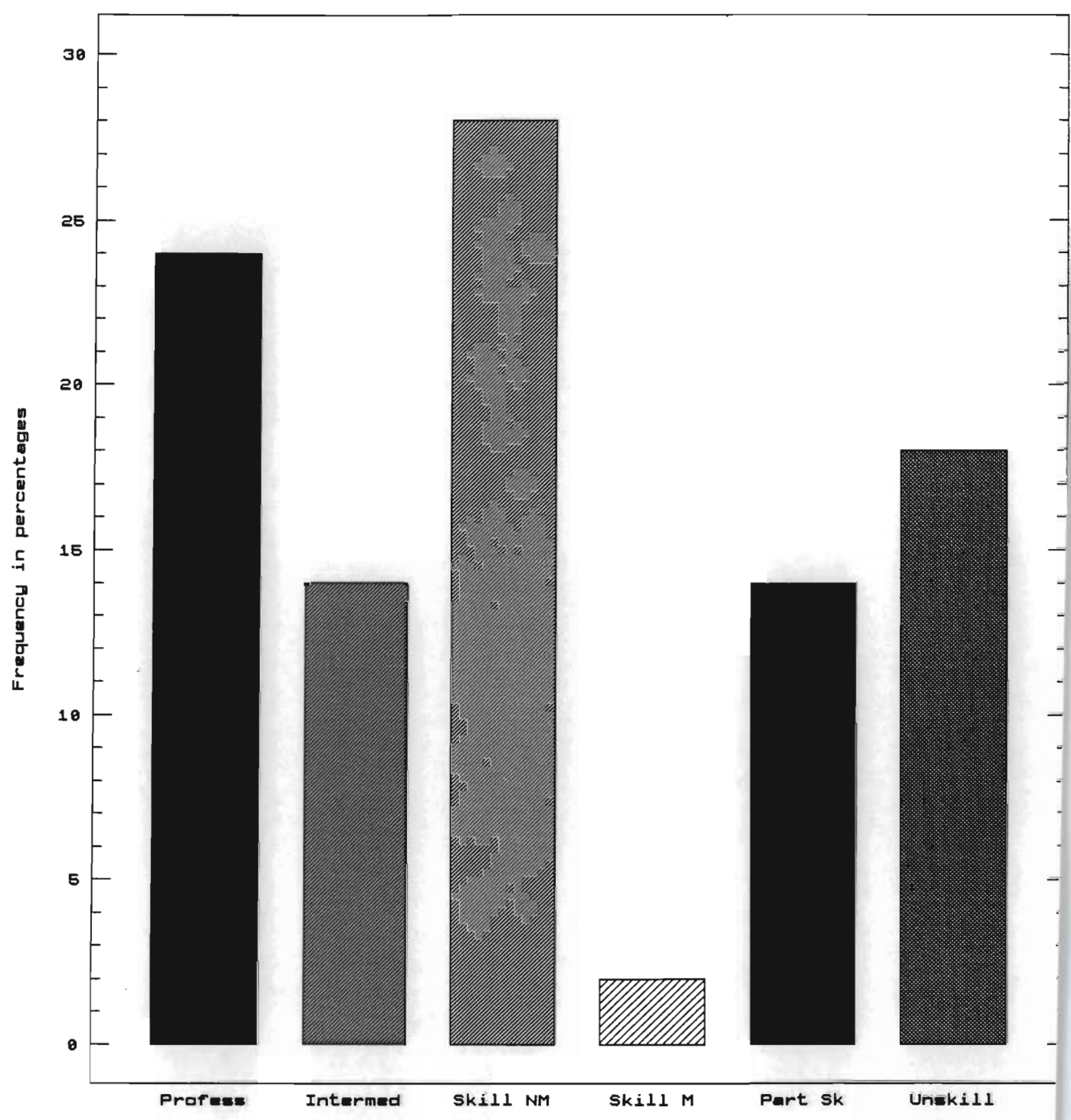


Figure 8.5: Vertical barchart of occupational status reflected in percentages



categories. Being an educational organisation, the majority of members are responsible for either research and teaching or support services, such as financial, informatics and secretarial. There is little need for skilled manual workers apart from maintenance and minor development work. However, there are a fairly large number of members in the unskilled category, who work as cleaning staff and gardeners mainly.

The Chi-squared test resulted in  $p = 0.4932$ , which is high and it was concluded that the differences in the numbers of respondents per category were due to chance. This could have been anticipated as the sample was drawn in relation to occupational rank as designated by the organisation, and these ranks contain an assortment of types of work.

Occupational status is an extremely important variable in that it may influence many others relating to aggregate health. For this reason, its possible association with others was investigated throughout the assessment.

Regressions performed between occupational status and educational status indicated a positive association (correlation coefficient  $-0.902$ ,  $r$ -squared  $81.48\%$ ,  $p = .0001$ ,  $F$ -ratio  $211.152$ ). Therefore, as educational status rose, so did occupational status. This is to be expected, given that occupational status categories are based on educational qualifications to a large extent. It is especially marked in an educational organisation where members' educational qualifications are the first determinant, before experience, for a position. It was also found that were established, was the relationship between educational status and

occupational status. When a backward stepwise multiple regression was performed to investigate possible relationships between occupational status (the constant) and gender, ethnic group, age and educational status, the only significant association to emerge was between these two.

When occupational status was examined in relation to ethnic grouping it was evident that Whites occupied the upper categories almost exclusively, there were some Indians in the middle groups and Africans and Indians in the lower categories. The reasons for this are the same as those given under demographic variables (1.2). This association was demonstrated when the regression analysis yielded the following results: correlation coefficient  $-0.709$ .  $p = .0001$ , F-ratio  $48.6$ ). However, the university has instituted an affirmative action policy and the composition of its members will become more representative of the population in the next few years.

Regressions were performed between occupational status and gender and age, but no association was found.

### 3.1.2 Income

Table 8.12 shows the remuneration scales for respondents according to occupational rank. The occupational status of the respondent, in the organisation, determined the rate of remuneration.

Table 8.12: Frequency tabulations for income

Category			No of resps	%
Academic posts				
Grade	Title	Scale		
300	Prof/Res Prof level 7	92847 - 105003	0	0
301	Prof/Res Prof level 6	68400 - 89469	2	4
311	Assoc. Prof/ Assoc. Res Prof	62833 - 76387	1	2
321	Senior Lecturer	49819 - 68224	5	10
331	Lecturer	38077 - 60163	3	6
351	Senior Tutor	40366 - 52405	0	0
371	Junior Lecturer	26191 - 33883	0	0
Subtotal			11	22
Non-academic posts				
Rank 7		43856 - 65795	0	0
Rank 8		36716 - 59288	2	4
Rank 9		31349 - 52781	3	6
Rank 10		26762 - 42404	3	6
Rank 11		22629 - 34569	5	10
Rank 12		17852 - 30380	4	8
Rank 13		14556 - 25617	3	6
Rank 13 (mornings only)		9704 - 14768	1	2
Rank 14		13296 - 19614	2	4
Rank 15		12180 - 18768	5	10
Rank 16		10755 - 15813	2	4
Rank 17		9723 - 14058	0	0
Rank 18		8736 - 12888	9	18
Subtotal			39	78
Grand total			50	100

### 3.2. Work profile

#### 3.2.1 Occupational history

An occupational history was collected for each respondent. The intention was not to report on these

collectively, but rather to use them in establishing the health status and potential risks for individual members. No common trends were identified, such as frequent movement between departments or most members having a short history of employment with the organisation.

The length of time that respondents had been employed at the university was examined in some detail. It was found that 20% of the sample had worked there for less than 4 years, 14% for 5 to 9 years, 22% for 10 to 14 years, and 26% for 15 to 19 years. The remainder (18%) had been employed there for 20 or more years. The mean length of employment was 13.22 years and the S.D. was 8.61 thus demonstrating great variation in the sample values. Despite this variation, the fact that 66% respondents had worked there for 10 or more years shows that the respondents were a stable workforce and that staff turnover was not especially high. The situation was in keeping with the long-held perception that the university has been a good employer, with regard to salaries and fringe benefits. However in more recent years, it has not been able to maintain parity with the private sector, although respondents have tended to stay as jobs have been limited due to the economic recession.

As can be observed in Table 8.13, women respondents varied less in the number of years that they had been employed at the university. However, there was a great variation in values for gender, ethnic group and academic/non-academic respondents.

Table 8.13: Measures of central tendency and dispersion for the number of years worked at the university

Category	Mean	S.D.
Men	13.63	10.02
Women	12.6	6.12
Africans	11.69	8.94
Indians	17.88	12.36
Whites	12.73	6.78
Academic	12.73	7.89
Non-academic	13.36	8.90

### 3.2.2 Nature of work

Table 8.14 reflects the distribution of respondents across the faculties and sections, within which there were departments. They were differentiated in terms of whether they were academic faculties, ie. a teaching department, or sections providing support services. However, the respondents drawn from the academic departments were not all academic staff. Besides confirming that sample was drawn from a cross-section of the organisation, it contributed valuable information regarding the nature of the respondents' work. When the instrument is administered to a larger sample or used periodically in the same organisation, trends and problems relating to certain departments could be identified. For example, a department with a high absentee rate would need to be investigated to establish whether this was due to hazards in the workplace, including psychosocial hazards in the form of poor management. However, the sample was too small to obtain significant statistics in this regard.

In addition to noting the department, a detailed description of each respondent's work was collected.

Table 8.14: Distribution of respondents across faculties or sections

Faculties /Sections	No of resps	%
Academic		
Economics and Management	3	6
Humanities	6	12
Science	5	10
Education	1	2
Law	1	2
Social Science	1	2
Architecture and Allied Disciplines	1	2
Engineering	1	2
Subtotal	19	38
Support Services		
Finance	3	6
Computer Services	2	4
Library	4	8
Student Affairs	1	2
Public Affairs	1	2
Multicopy	1	2
Registry	1	2
Security	1	2
Sports Administration	1	2
Building Services	2	4
Residences	7	14
Grounds	7	14
Subtotal	31	62
Total	50	100



The findings will not be reported for the organisation as a whole, as they were important for assessing members on an individual basis. As has been explained in 3.1.1, members were assigned an occupational status based on this information.

### 3.2.3 Workload

The major response to questions about workload was that members experienced either quantitative overload (76%) or a combination of quantitative overload and qualitative underload (14%), as shown in Table 8.15.

Of those experiencing quantitative overload (or too much to do), 63% said that this happened most of the time. The other respondents linked it to times, such as the end of semesters in the case of academic staff and summer in the case of the gardeners. Six of the respondents who experienced a quantitative overload and qualitative underload felt this most of the time or frequently.

The Chi-squared test was conducted for the nominal categories of "yes" or "no" to the question of the experience of quantitative overload. The resultant significance level of 2.36049E-4 showed that the values were not due to chance and were statistically different. Therefore, it can be concluded that a large number of members of the organisation experience quantitative overload.

General work responsibilities were cited as the work associated with the experience by the majority of both groups, with only a very small number linking it to work such as relief duties or post-graduate research supervision.

Table 8.15: Frequency tabulations for items relating to workload

Item	No of resps	%
Quantitative overload		
yes	26	52
sometimes	12	24
no	12	24
Total	50	100
Quantitative underload		
no	50	100
Total	50	100
Qualitative overload		
no	50	100
Total	50	100
Qualitative underload		
yes	1	2
sometimes	1	2
no	48	96
Total	50	100
Quantitative overload and qualitative underload		
yes	2	4
sometimes	5	10
no	43	86
Total	50	100
Effects of quantitative overload		<sup>1</sup>
anxiety	2	5
tension, neck stiffness, backache	9	24
fatigue	12	32
lack of sleep/insomnia	9	24
irritability	4	11
marital or family discord	1	3
eating disturbances (anorexia, overeating)	2	5
weight change (increase, decrease)	3	8
dysphagia	1	3
epigastric pain, pain from duodenal ulcers	2	5
asthma aggravated	1	3
increased respiratory tract infections	1	3
palpitations	1	3
"feeling stressed"	7	18
increased alcohol consumption	2	5
no time for leisure or exercise	4	11
no negative effects	11	30
Effects of quantitative overload and qualitative underload		<sup>2</sup>
anxiety	1	14
insomnia	1	14
anger	1	14
restlessness at the end of the day upon arrival at home after work	1	14
irritability	1	14
dysmenorrhoea	1	14
tension	1	14
headaches	2	28
fatigue	1	14
need to be left alone when arriving home after work	1	14
increased appetite	2	28
frustration	2	28
"feeling stressed"	1	14
no time for leisure or exercise	1	14
no negative effects	2	28

Key:

- 1 - Percentage calculated for a total of 38 respondents who experienced quantitative overload.  
2 - Percentage calculated for a total of 7 respondents who experienced quantitative overload and qualitative underload.

Respondents were asked how they felt when they experienced quantitative overload or quantitative overload and qualitative underload and the results are shown in Table 8.15. All of the effects reported are classically associated with the signs and symptoms of stress, as described in Chapter Four. The researcher deliberately avoided the use of the word "stress" during the interviews so that respondents were not influenced by it. Those who said they did not experience any effects were found to be using stress reduction techniques, such as exercise and relaxation.

Studies reported in Chapter Four found that the negative effects of work overload are often ameliorated by other factors such as work satisfaction, feeling valued in the organisation and a supportive work environment. To investigate this for the sample, the health effects of quantitative overload were crosstabulated with work satisfaction. It appeared that only 29% of respondents who experienced high levels of work satisfaction and 35% of respondents experiencing moderate work satisfaction, did not report any negative health effects. Therefore, the majority of these respondents experienced health effects associated with their work.

It is accepted that it is not easy to objectively measure workload across a range of different types of work. However, the data elicited from the survey does indicate respondents' subjective evaluation of their workload. This is extremely important as it was shown in the literature review (4.5.4) that it can influence their performance. Workers tend to perform in accordance with the rewards, therefore people working for low salaries adjust their output accordingly.

The health implications for those working long hours will be discussed further in the health risk profile.

#### 3.2.4 Hours

The total number of hours usually worked per week, on university work, by respondents was computed by adding the hours worked at home and at work. Figure 8.6 shows the results as a frequency polygram. The respondent who worked part-time is indicated by the first point in the graph - she usually worked 22.5 hours per week. Excluding this respondent, the minimum total hours worked was 32.5 and the maximum was 72.5. The mean number of hours worked by full-time respondents was 42.12 and the S.D. was 8.05, demonstrating a marked spread in the values.

When occupational status was considered in relation to total hours worked, it was clear that respondents in the higher categories worked longer hours, as would be anticipated. Those in the lower categories rely on public transport, receive lower wages and are unlikely to believe that they should work longer hours than stipulated by their employer. Those in the higher categories were given the responsibility for certain work and it was expected that this would be completed, even if it took longer than the "usual" working day. One example was the provision of a course by academic staff. This entailed the planning and preparation of the course, actual teaching and its evaluation. During the period that it was offered, peaks in the amount of work to be done occurred and the lecturer worked longer hours to complete this. However, the extra work was often balanced by quieter periods during student vacations.

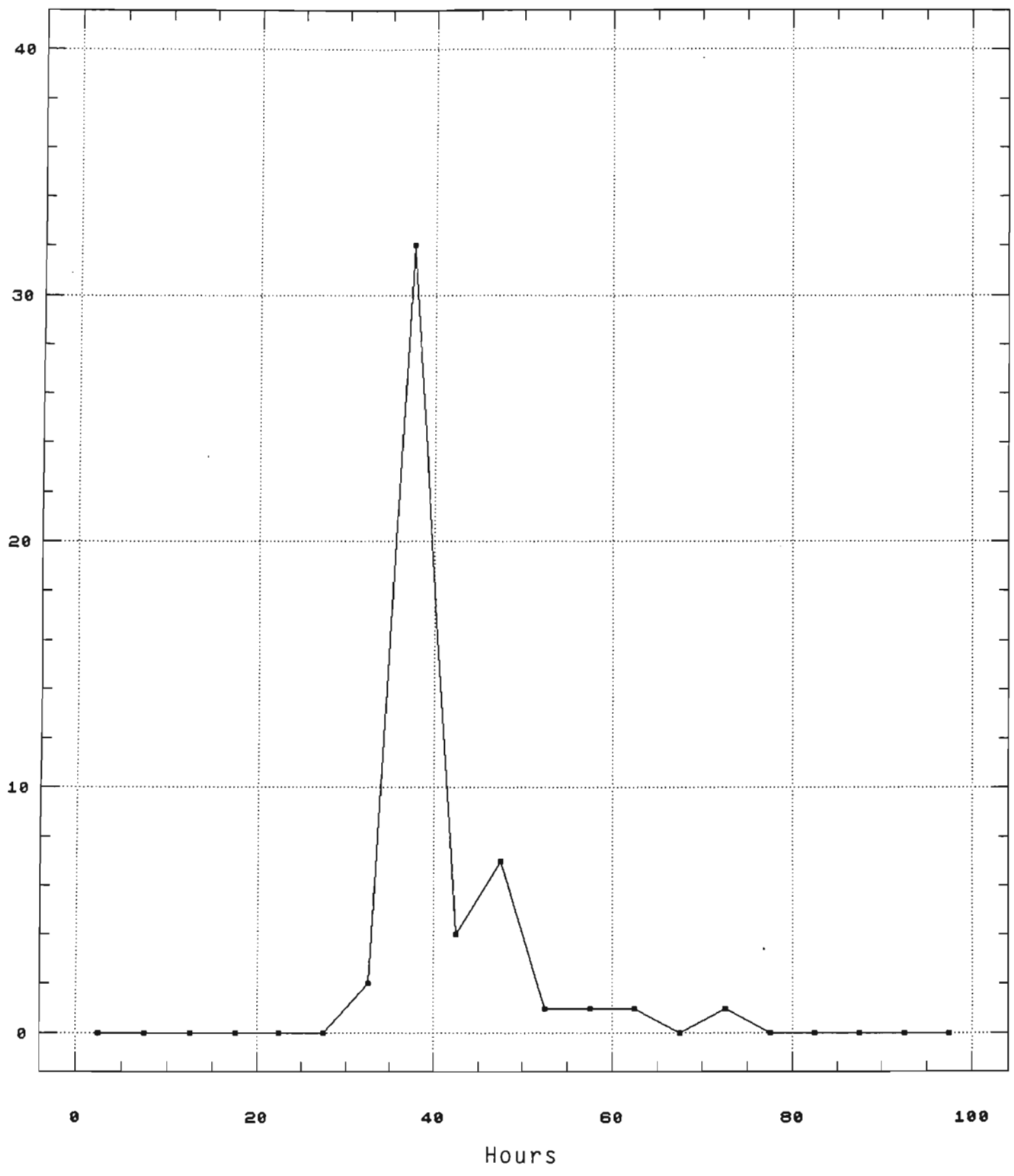


Figure 8.6: Frequency polygon of total hours worked per week on university work

Taking account of the ethnic patterning of occupational status in this organisation (3.1.1), it follows that the majority of respondents who worked longer hours were Whites. Similarly, those who worked shorter hours were Africans or Indians.

Most respondents performed all their university work in the workplace, and of these, 38 worked fixed hours and 2 worked flexi-time. The latter respondents included one academic and one non-academic staff member. Ten academic staff worked on university work at home. In the frequency polygram (Figure 8.7) it can be seen that 3 of them worked 9 hours and another 3 worked 19 hours per week at home. Five of them usually worked a 40-hour week and the time was additional to this. Only one respondent worked shifts and these were always day shifts. In fact very few members of this organisation work night duty shifts.

When time taken for travelling to work was crosstabulated with hours worked per week it was clear that the respondents who worked between 35 and 39 hours spent the greatest amount of time on travelling. As explained above, they were Africans and Indians in the lower occupational status categories, who relied on public transport. Their total time (hours worked added to travel time for the week) was greater than for respondents in the higher occupational status categories. The frequency polygram for total time appears in Figure 8.8, showing how the distribution pattern has changed markedly, with most workers spending between 40 and 70 hours a week on work and travelling time. The mean total time was 54.19 and the S.D. was 8.35. Therefore, although the spread was great, the mean was greater than the mean for total



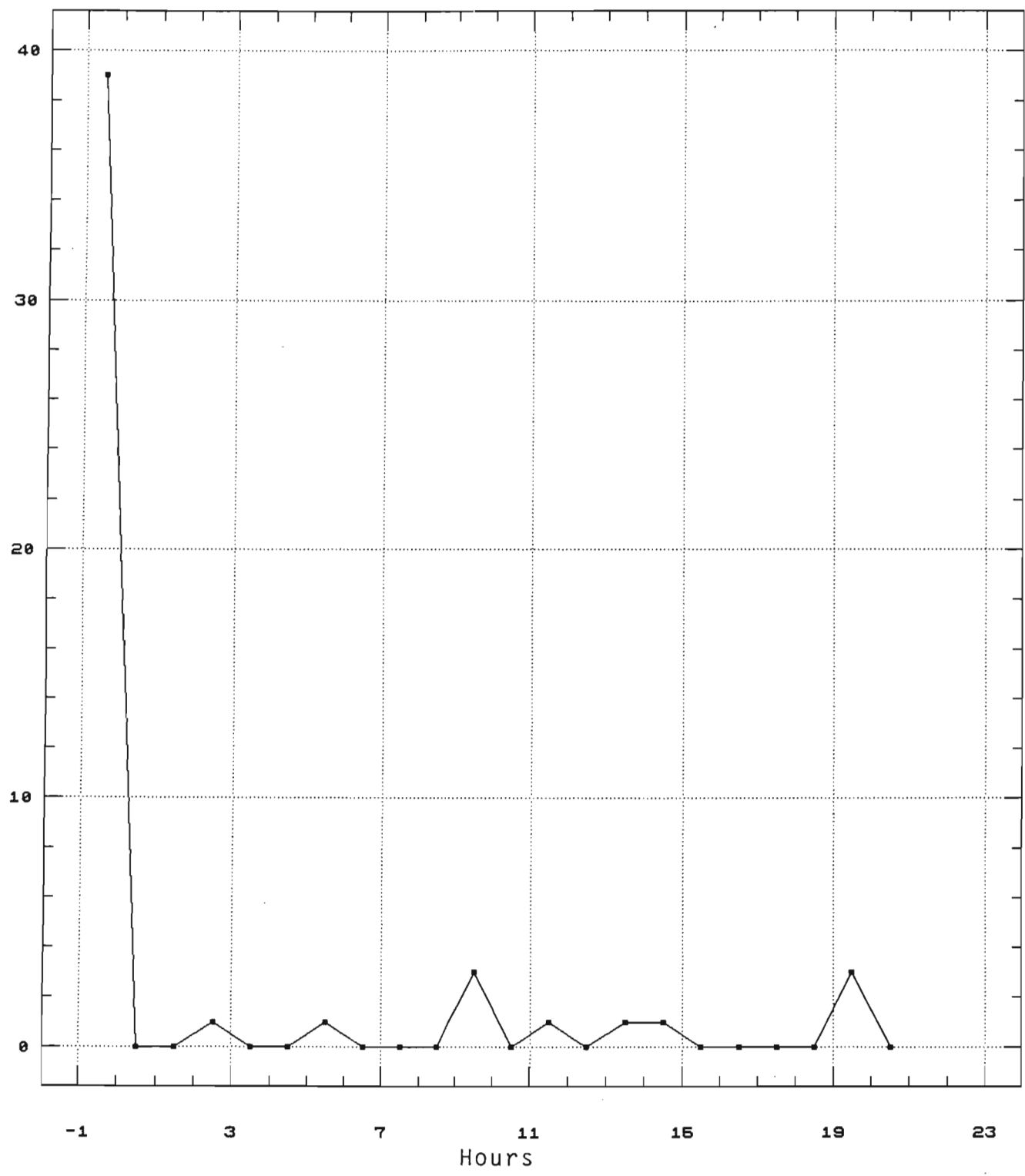


Figure 8.7: Frequency polygon of hours worked on university work at home per week by employees

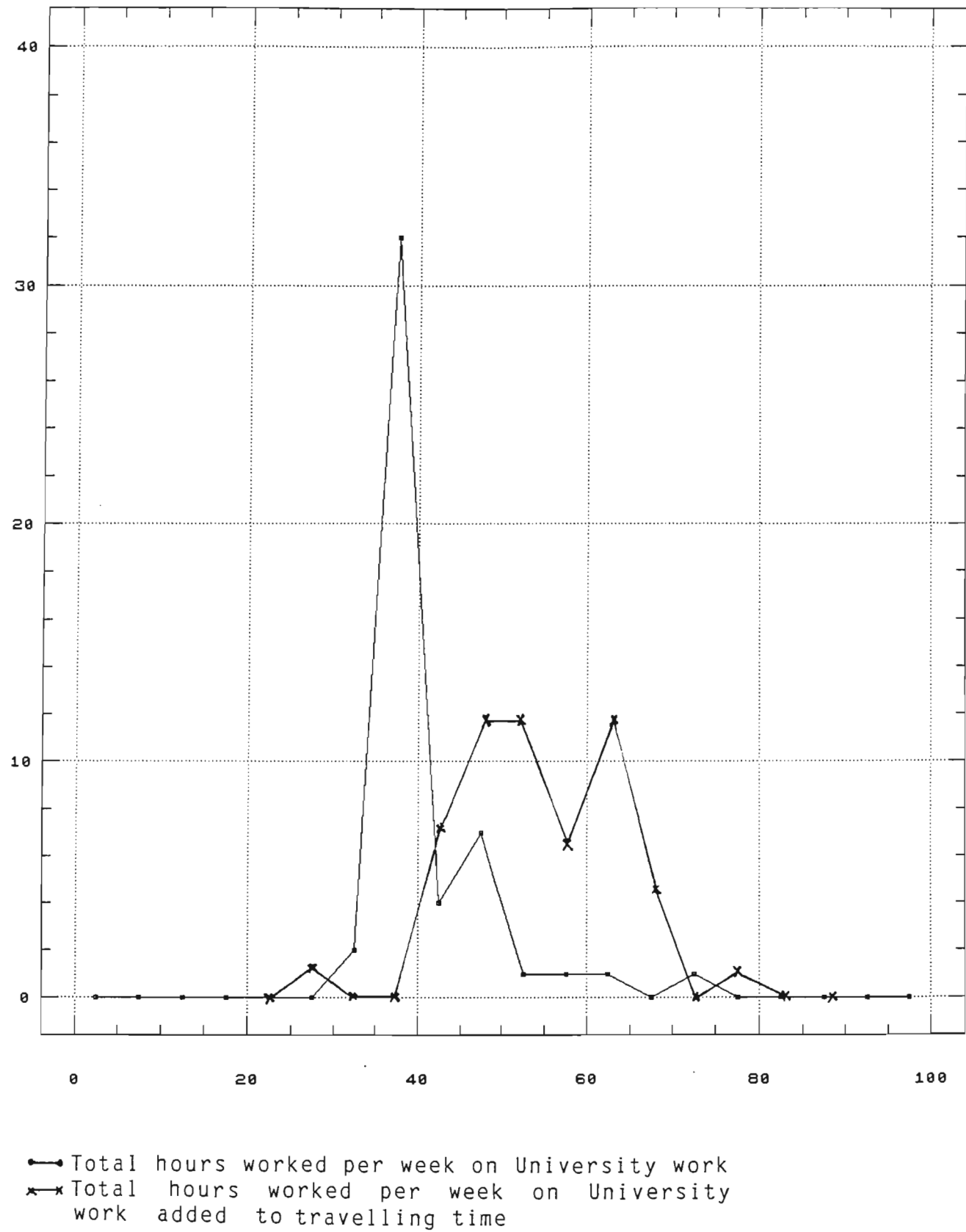


Figure 8.8: Frequency polygon of total hours worked per week on university work added to travelling time

hours worked (42).

### 3.2.5 Peaks

The 49 full-time respondents were asked whether they experienced peak periods at work. One reported that this did not happen at all, 13 said it happened occasionally and 36 stated that they regularly experienced peaks. The mean number of hours worked per day during a peak period was 9 and the S.D was 2 showing that there was fairly great variation in the number of hours worked.

Figure 8.9 gives the number of hours usually worked per day during peak periods. It is interesting to note that 24 of the respondents worked no more than 7.5 hours a day during these peak periods. These respondents used public transport, were in the lower occupational status categories and so were Africans and Indians. They stated that they were unable to work a longer day and consequently tried to work harder during the day to get through the work. The 17 (35%) respondents who worked more than 9.5 hours a day during peak periods were all academic staff. Nine of the respondents worked more than 10.5 hours a day during peak periods, which they said happened often. They were all academic staff, who had indicated that they frequently experienced quantitative overload. They had also reported a number of negative health effects from their workload. These respondents would need to develop stress management techniques and their workload should be investigated by management.

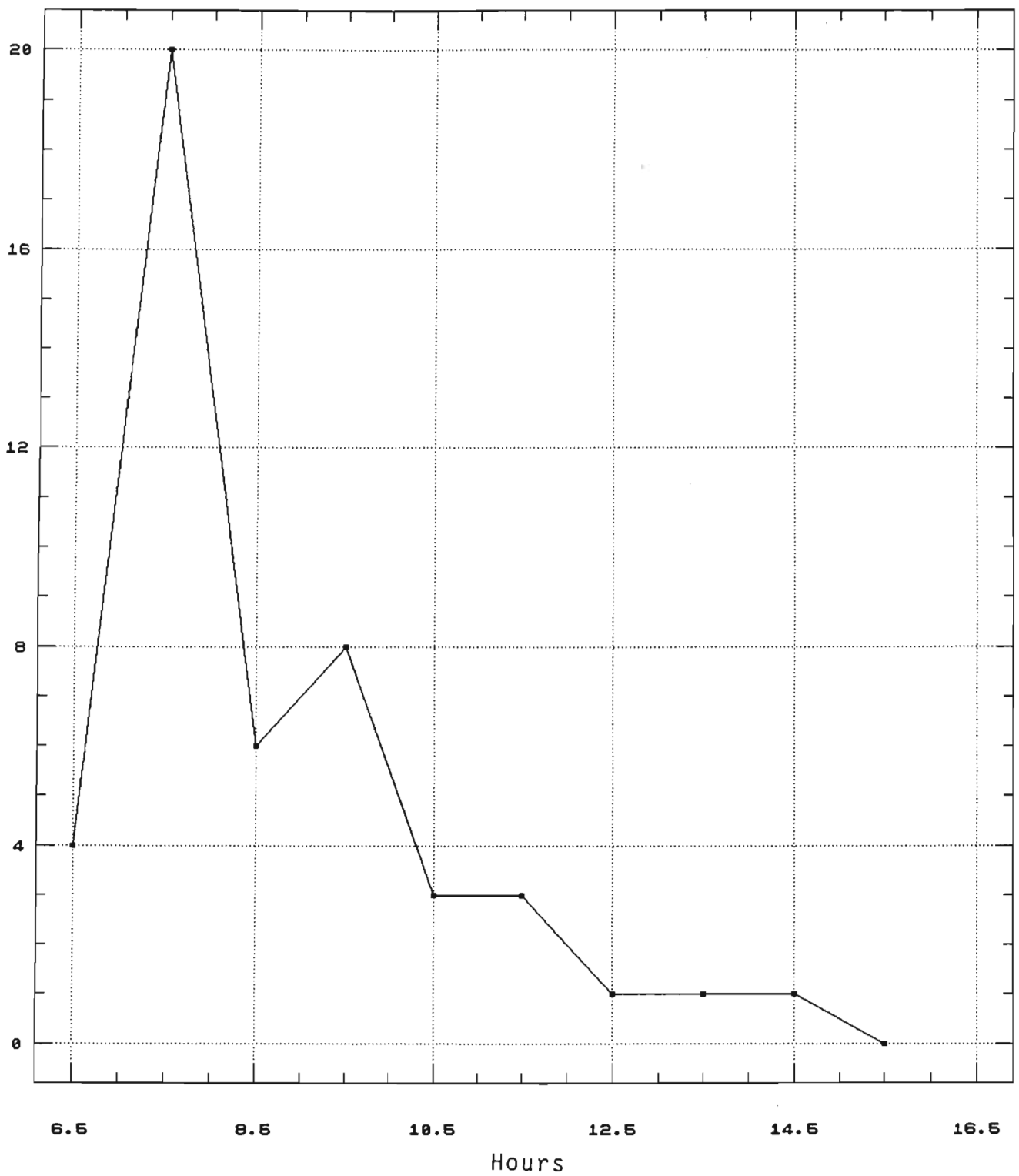


Figure 8.9: Frequency polygon of number of hours worked per day during peak periods by full-time employees

Analysis of the times when peak periods were experienced revealed great variations, largely determined by the nature of the respondents work (Table 8.16). Some respondents experienced peaks at times that fell into more than one category. For example, cleaning staff in the residences said they were particularly busy on Mondays and at the end of semesters. For this reason, responses were not totalled.

Table 8.16: Frequency tabulations for peaks in work

Item	No of resps	% *
Times when peaks occurred		
beginning of each week	1	2
beginning of each semester	10	20
end of each semester	15	31
second semester	1	2
during semesters	3	6
summer months (October - March)	4	8
every three months	1	2
midyear (July)	8	16
beginning of each month	2	4
various times	17	35
throughout the year	1	2
Length of peak periods		
< 1 day	1	2
3 - 4 days	6	12
1 - 2 weeks	16	33
3 - 4 weeks	5	10
7 - 8 weeks	4	8
3 - 4 months	3	6
5 - 6 months	4	8
varied	9	18

\* - percentage calculated for 49 respondents.

The length of the peak period also varied greatly, with some respondents again reporting peaks in more than one category. It was extremely difficult to quantify the total hours worked for peak periods, owing to the variations and individuals' perceptions of what constituted a peak. However, it can be concluded that a significant number of the respondents felt that they regularly had times when they had to work much harder or longer than usual.

### 3.2.6 Moonlighting

Most respondents (62%) said that they did not perform other work (ie. not for the university) in order to augment their income (Table 8.17). However, 18% said they regularly performed additional work and 20% said they sometimes did this. These respondents varied in occupational status and were not confined to the lower income earning groups. When categories were pooled so that respondents were categorised as either performing additional work or not performing it, the Chi-squared test resulted in a significance level of 0.89686. It was concluded that these values could be due to chance and were not statistically significant.

An analysis of the type of work performed, showed that in most cases it related to their occupation. Academic staff, in particular, earned additional income by giving lectures and examining for other organisations. This type of work was often regarded as part of the respondents responsibility to their profession and an important source of recognition of their standing in it. These respondents used the income for their professional development by purchasing books or attending conferences.



Table 8.17: Frequency tabulations for items relating to moonlighting

Item	No of resps	%
Performance of additional work		
yes, regularly	9	18
sometimes	10	20
no	31	62
Total	50	100
Type of additional work		
typing/wordprocessing	3	16
clerical	2	11
book-binding	1	5
buying/selling	1	5
mechanical/electrical repairs	3	16
carpentry	1	5
consultations (relating to respondents particular discipline)	4	21
lecturing	1	5
examining (setting/moderating)	2	11
sewing	1	5
religious duties (muslim)	1	5
traditional healer	1	5
Frequency of performance of additional work		
daily	2	11
weekly	7	36
monthly	2	11
yearly	8	42
Total	50	100
Additional income required to meet basic living costs		
yes, usually	11	58
sometimes	2	10
not usually	6	32
Total	50	100
Use of additional income		
basic living costs	12	63
education for children	3	16
social activities and entertainment	4	21
holidays	1	5
research	1	5
attending conferences	1	5
buying work-related publications	1	5

A total is not given in the table for the type of work as some respondents performed more than one type of work.

Respondents varied in the frequency with which they performed this additional work. However, 47% worked either daily or weekly on it, which represents a large proportion of the sample.

It is interesting to note that 66% of these respondents who regularly took on additional work also reported that they frequently had work peaks. However, the majority of respondents who said they regularly had peaks did not do additional work at all (69%). Furthermore, an analysis of the respondents who worked more than 50 hours per week on university work, showed that 19% of them regularly took on additional work and 19% occasionally did so. Therefore, it cannot be concluded that the respondents who did additional work were less busy with university work.

Eleven of the respondents said they regularly needed the additional income to meet their basic living costs, and a further 2 sometimes needed it for this purpose. Their answers were validated when they were questioned on the use of the income. Only a small number of people spent the money on professional development or leisure pursuits. Those needing it for basic living costs fell into the lower income categories and tended to have a larger number of financial dependents.

The term "moonlighting" used for this variable implies that the organisation would disapprove of the respondent performing this additional work. However,

as has been said, some of them performed the work almost as an adjunct to their position in the organisation. Furthermore, most immediate supervisors were aware that the respondents performed the work and they did not attempt to stop it. Therefore, in this organisation, control is not extended formally to preclude this activity as happens in other more restrictive organisations.

### 3.2.7 Job rotation

Although respondents were not asked specifically whether they had been rotated in their job to avoid health damage from hazards in the workplace, information pertaining to this was elicited in the questions on work description and occupational history. Many respondents had been promoted within the same department in the organisation, two had moved to other departments to obtain promotion and one had moved into a part-time position within the same department in order to be able to spend more time at home with young children. However, these moves were not job rotations for health reasons. Only one respondent reported having been moved within the department to a work area that did not involve him being as exposed to the weather as in his previous position, because he suffered from a respiratory complaint.

### 3.3 Organisational culture

Data on the type and culture of the organisation would be collected in Parts One and Four of the strategy for assessing an organisation, as outlined in Chapter Six. However, in this case a great deal of information was gained in planning and executing the study. Some of it is included in this section.

### 3.3.1 Type

The description of the setting for the study contained in Chapter Seven (7.3.2) provides detailed information on the type of organisation. This was also verified in the data on the nature of work performed by respondents, which showed that the primary purpose of the organisation was to teach people at tertiary level and to conduct research. Therefore, the activities of its members concerned this directly in respect of academic staff, or indirectly in terms of the staff who provided support services.

The university as a whole had three campuses and the one that was surveyed had 1555 employees. On this campus, there were 47 academic departments subsumed under 8 faculties. The differential factor between faculties concerned the particular academic disciplines that were gathered within them. There were a further 24 sections or units providing support services. Each of these departments could be identified by their specialised functions. A number of academic departments, usually within one faculty, would co-operate to produce the end product - a graduate. Therefore, the organisation was characterised by a high degree of specialisation.

### 3.3.2 Control

Owing to the size of the organisation and the fact that it was a parastatal organisation, great emphasis was placed on control in terms of well-defined authority, rules and procedures in order to co-ordinate and standardise activities. However, there were concerted efforts towards devolution of power in the organisation so that decision-making was carried out by a number of committees, comprised of departmental and

section heads, or at departmental level.

Two items in the instrument related to control at departmental or unit level. In addition, work-related sources of stress were also considered in this regard (see 3.4.1).

The most important item concerned the degree to which respondents were involved in decision-making in relation to their work. The pie-chart in Figure 8.10 indicates that most respondents felt that they were consulted about decisions but were not fully involved in decision-making. A disconcertingly large number (30%) reported that they were only occasionally consulted or not consulted at all. The significance level for Chi-squared was 5.85267E-3, showing that the values were statistically significant.

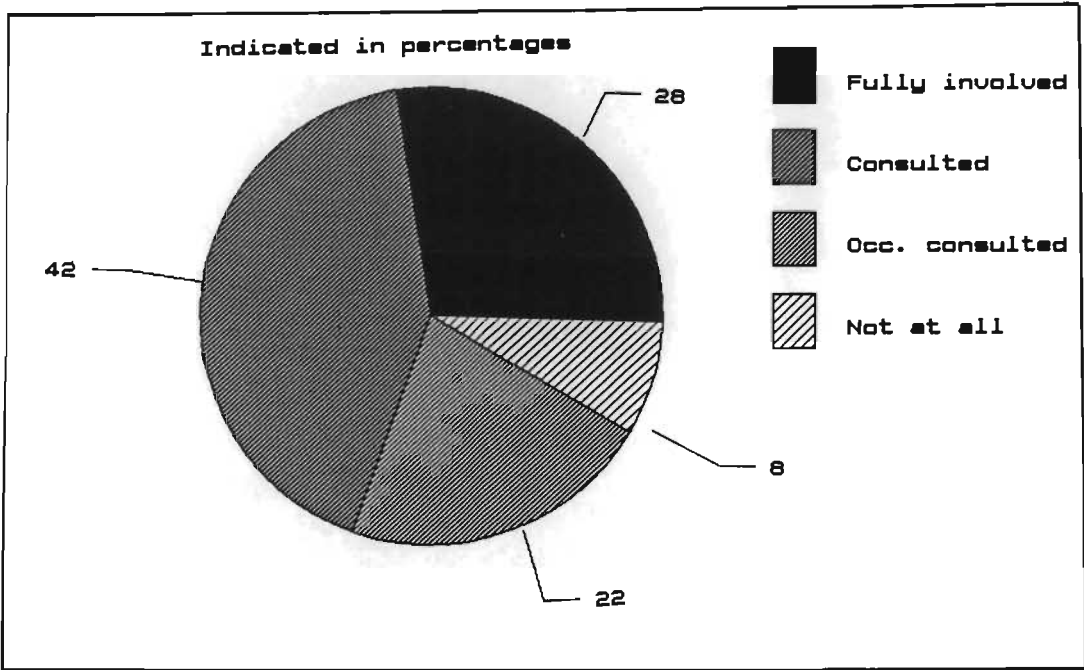


Figure 8.10: Pie chart indicating respondents' involvement in decision-making

Crosstabulations were performed with a number of variables (Table 8.18). As can be seen, most women (60%) felt that they were consulted rather than fully involved in decision-making, whereas equal numbers of men felt that they were fully involved (33%) or consulted (30%). However, this difference was not found to be statistically significant when the Kruskal-Wallis test was applied ( $p = 0.737$ ) and it was evident that they may have been due to chance.

Table 8.18: Crosstabulations between decision-making and gender, ethnic group and occupational status

Category	Fully involved	Consulted	Sometimes consulted	Not consulted
Gender				
male	33	30	23	13
female	20	60	20	0
Ethnic group				
African	6	44	38	12
Indian	13	50	25	12
White	46	39	11	4
Occupational status				
professional	58	42	0	0
intermediate	57	29	14	0
skilled non-manual	14	43	29	14
skilled manual	100	0	0	0
partially skilled	0	57	29	14
unskilled	0	44	45	11

Note: Frequencies expressed as percentages.



There was a marked contrast when ethnic group was cross-tabulated with decision-making. African respondents felt that they were either regularly consulted (44%) or occasionally consulted (38%), whilst Whites perceived that they were fully involved (46%) or regularly consulted (39%). Most of the Indian respondents (50%) felt that they were regularly consulted when decisions were made in relation to their work. The Kruskal-Wallis test confirmed that there was a marked and statistically significant difference in the values between ethnic groups ( $p = 6.87765E-3$ ).

Finally, a crosstabulation between occupational status and decision-making showed that more respondents in the upper categories felt they were fully involved or regularly consulted, as opposed to the perception amongst the respondents in the lower categories that they were less involved in decision-making. This difference could not have been due to chance and there was a definite association between the two ( $p = 7.44094E-6$  for the Kruskal-Wallis test). (The Kruskal-Wallis test is appropriate as this is a bivariate distribution at nominal and ordinal level, with  $2 \times n$  cells in the table, Pilcher, 1990.)

It is a common occurrence that workers in the higher occupational status categories are more likely to be involved in decision-making than those with lower status. A positive association between these two variables was found (correlation coefficient 0.5,  $r$ -squared 25.41,  $F$ -ratio 16.34 at  $p = .0001$ ). Clearly, the pattern observed for ethnic groups is related to their occupational status in this organisation, as explained in 1.2. However, as discussed in 4.5.4 of the literature survey, it is important that all members

of an organisation feel that they are involved in decision-making in relation to their work.

The second item concerning control focussed on the ease with which respondents were able to see a doctor in working hours. In restrictive organisations, respondents report that this is difficult as time away from work is strongly discouraged. This problem is commonly experienced by respondents who rely on the public sector of the health services, as they are only able to consult a doctor during normal working hours, except in cases of emergency and serious illness.

In this organisation, 84% of respondents stated that they did not experience difficulty in consulting a doctor during working hours. Of the remaining respondents, 6% occasionally experienced difficulty and 2% stated that they were not usually able to consult a doctor in working hours.

When the reasons for these difficulties were examined it was found that in the main it was pressure of work, transport difficulties or the fact that the respondent would be away from work for a whole day. Those citing the latter two reasons were in the lower occupational status and income groups, who relied on public transport and used public sector health care. People wishing to attend these services had to arrive there very early to procure a place in the queue and could expect to spend the whole day there. Therefore they needed to go directly to the hospital or clinic and could not easily obtain public transport to these services later in the day, if they wished to go from the workplace. These respondents then had to use their sick leave to consult the doctor and if this was a

regular occurrence, such as the attendance at a clinic for hypertension monitoring, became concerned that their sick leave allowance would be quickly exhausted. Therefore, the control exercised by the organisation was strong.

It is important to note, that the organisation did have a clinic that offered limited services for employees. All of those reporting difficulties in seeing a doctor outside the workplace made use of this facility. However, the service did not assist with the monitoring and provision of medication for chronic conditions such as hypertension and diabetes. Thus, although control was strong in this regard, the organisation did provide for their needs to some extent. (The use of this service will be discussed further in 3.6.4.).

The respondents who could not attend a doctor easily owing to pressure of work or unless their superior was able to relieve them, were in the intermediate occupational status classes and used private doctors so they would not need to wait too long to be seen. However, they were less easily able to leave their work station as it was important to maintain the service they were providing. For these respondents, it was staffing shortages that caused the problem, not strong organisational control.

It has already been mentioned that organisational control was not strong with regard to limiting members from performing additional work (3.2.6).

### 3.3.3 Integration

The degree of co-ordination between departments to achieve organisational goals was not directly

investigated in the instrument. However, answers for other items did yield some data on this aspect. For the item on sources of work-related stress, two respondents felt that co-operation between departments was sometimes poor. Similarly, one respondent in answer to the question on perceived lack of authority (3.3.5) said that departments often did not co-operate and this made it difficult for him, to perform his job. These are the opinions of a small number though and the issue would need to be investigated in far more depth.

#### 3.3.4 Communication

Items relating to communication in the organisation are reflected in Table 8.19. The majority of respondents (70%) felt that their superior adequately shared the information that they felt they needed to perform their work. However, 24% of them felt that they received limited or minimum information. This is demonstrated clearly in the pichart in Figure 8.11. Using the Chi squared test,  $p = 0.0117$ , showing that the results are statistically significant and that they are representative of the population.

There was no pattern in their occupational status, so it cannot be concluded that it was the respondents in the lower categories that received less information as happens in organisations where they are perceived as less valuable or important. This was confirmed when the Kruskal-Wallis test was applied to the bivariate distributions of communication and gender, ethnic group and occupational status and no significant associations were found.

Only 8% of respondents felt they were given conflicting instructions frequently or very frequently, and some of these answered to more than one superior

which could account for this. Similarly, only 5% reported that their superiors changed their instructions frequently or very frequently.

Table 8.19: Items relating to communication in the organisation

Item	No of resps	%
Extent to which information relating to work is shared		
superior tries to give all relevant information and all information requested	20	40
superior gives information needed and answers most questions	14	28
superior gives only the information the superior feels is needed	12	24
superior gives minimum information	4	8
Total	50	100
Conflicting instructions from superior		
very frequently	1	2
frequently	3	6
sometimes	11	22
rarely	35	70
Total	50	100
Change of instructions by superior		
very frequently	1	2
frequently	2	4
sometimes	17	34
rarely	30	60
Total	50	100

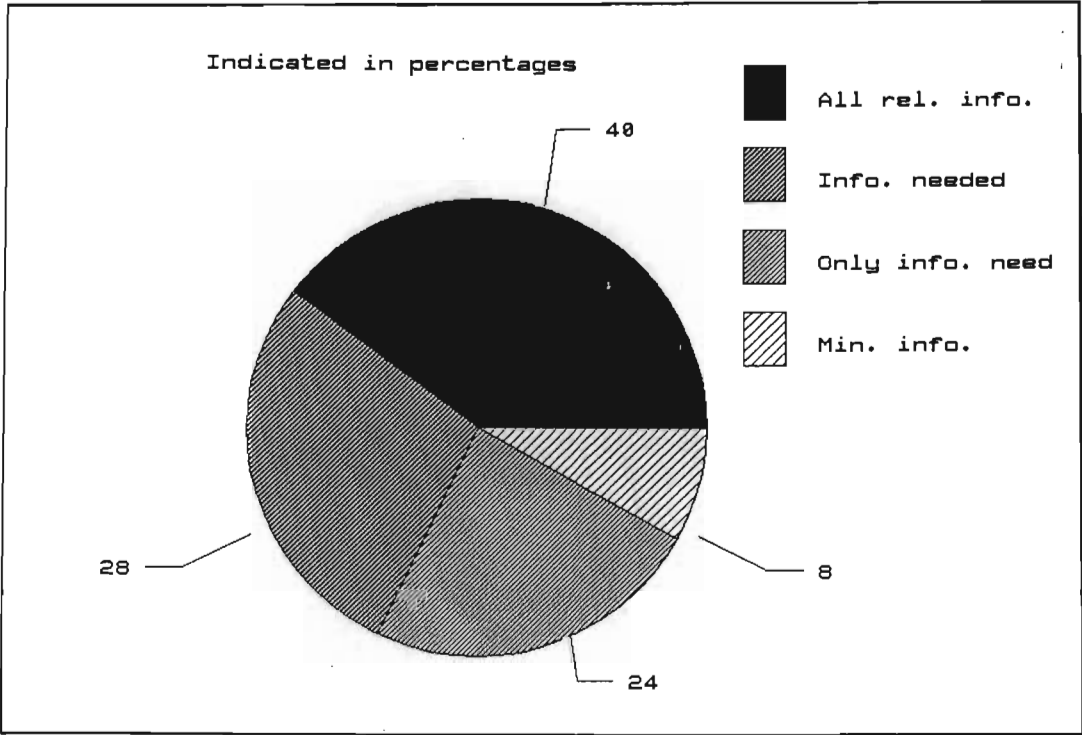


Figure 8.11: Piechart indicating the extent to which superiors share information

3.3.5 Authority

Most (82%) respondents perceived that they usually had enough authority to perform their work and the balance said they occasionally had enough authority (Table 8.20). In the latter case, perceived lack of authority was mainly attributed by respondents to their



low occupational status, although a regression analysis did not find an association between the two variables. Two respondents cited inflexible university central administration that resisted change. One respondent required the co-operation of a number of departments in order to execute his work and yet had no authority with some of them to deal with problems when they arose. Two respondents did not give any reasons.

Table 8.20: Items relating to respondents' perceived authority in the workplace

Item	No of resps	%
Perception of sufficient authority to carry out the work		
yes, usually	41	82
sometimes	9	18
not usually	0	0
Total	50	100
Reasons for perception of lack of authority		
low occupational status	4	8
inflexible administration	2	4
lack of inter-departmental co-operation	1	2
Total	7	14 <sup>1</sup>

Key:

1 - Percentage of sample

The Chi-squared test demonstrated that the values for whether respondents perceived that they usually had enough responsibility, "yes" or "no", were statistically significant ( $p = 6.025881E-6$ ).

### 3.3.6 Responsibility

Again, the majority of respondents (88%) felt that they were given enough responsibility in their work (Table 8.21). This finding was statistically significant according to the Chi-squared test ( $p = 7.7004E-8$ ), and it can be concluded that most members of the organisation feel that they have sufficient responsibility. No association between perceived responsibility and occupational status was found when a regression analysis was performed. However, a positive correlation between responsibility and involvement in decision-making regarding their work emerged (correlation coefficient 0.46,  $r$ -squared 21.19%,  $F$ -ratio 12.6 at  $p = .0001$ ), which accords with other study findings reported in 4.5).

Five of those who felt they were not and were frustrated by it, said that it was due to lack of trust by their superior and that they were not allowed to use their initiative in getting the job done. One of the respondents cited conflict with his superior as the reason for not being given the responsibility. Later in the interview, this respondent revealed that the conflict was largely due to the fact that the respondent believed that the superior was inadequately qualified or experienced to do the work.

In conclusion, the organisation had many of the characteristics of an integrated bureaucracy. However,

it will be shown that many of the respondents were highly critical of the management of the organisation (3.4.1). The researcher contends that one possible reason for this was the large proportion of members who were highly educated, encouraged to think critically and who were practising professions which required that they be innovative, individualistic and creative. To manage a large organisation such as this, particularly when facing stringent economic constraints and against the backdrop of rapid societal change, was extremely difficult.

Table 8.21: Items relating to respondents' perceived responsibility in the workplace

Item	No of resps	%
Perception of sufficient responsibility for carrying out work		
yes, usually	44	88
sometimes	5	10
not usually	1	2
Total	50	100
Reasons for perception of lack of responsibility		
not trusted to use initiative and make decisions in getting the work done	5	10
conflict with the superior who will not give the respondent responsibility	1	2
Total	6	12 <sup>1</sup>

Key:

1 - Percentage of sample

The challenge would be to increase co-operation between departments to achieve the overall objectives of the organisation. One of the first moves of the new Principal was to set up a committee to review the management of the university. It appears that the intention was to meet this challenge by encouraging greater involvement of all its members in management issues, permitting autonomy where possible and advisable, and allowing members to use their discretion. Therefore, it seems that the organisation was trying to move away from an integrated bureaucracy to an organic culture. However, to effect this members themselves will have to change and adapt as well.

### 3.4. Self-actualisation

#### 3.4.1 Work satisfaction

The piechart in Figure 8.12 and the results in Table 8.22 show that the great majority of respondents experienced relatively high (38%) or moderate (44%) job satisfaction. Chi-squared test resulted in a significance level of  $4.37455E-5$ , showing that it is a significant finding.

The reasons given by the 9% who experienced dissatisfaction in varying degrees, centred around excessive workload, low occupational status and lack of mental stimulation. Those giving the latter response had indicated that they experienced qualitative underload.

Work satisfaction was investigated in depth in order to establish whether there were other factors that influenced respondents' perceptions as suggested in the literature. Regressions were conducted between

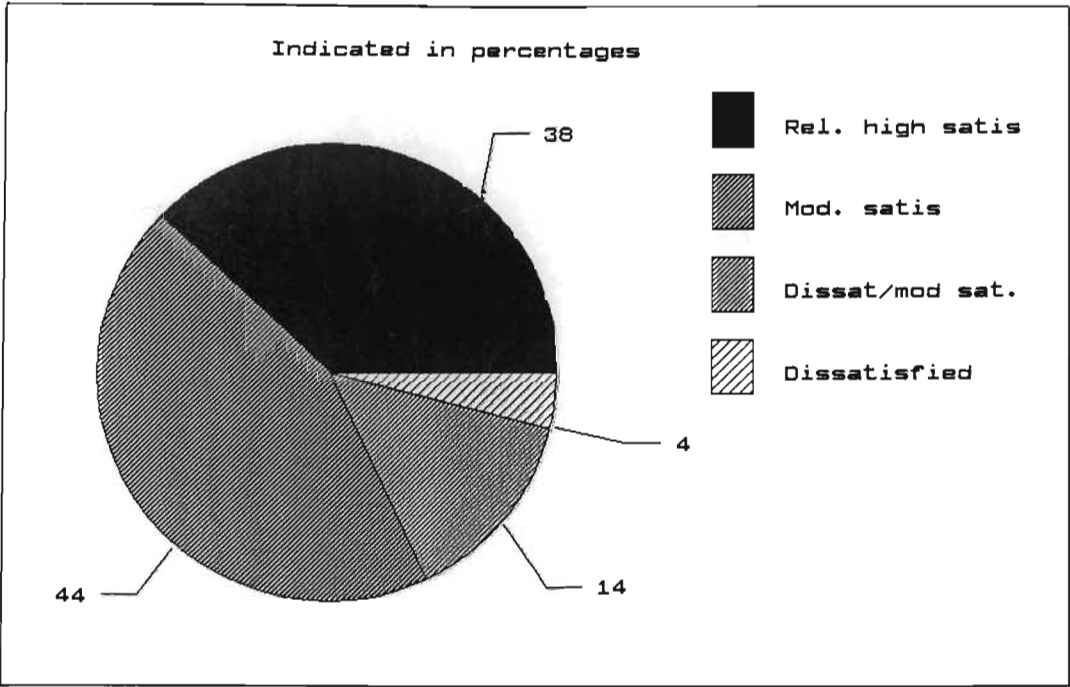


Figure 8.12: Piechart indicating the degree of respondents' work satisfaction

this variable and authority, responsibility, decision-making, occupational status, communication (information sharing), conflicting instructions, altered instructions, educational status, ethnic group and quantitative overload. Three relationships emerged. A positive association with decision-making was found (correlation coefficient 0.5, r-squared 26.67%, F-ratio 17.45 at  $p = .0001$ ). Therefore, respondents who experienced high levels of work satisfaction tended to also be fully involved in decision-making regarding their work. This accords with other studies (see 4.5.4.1 in the literature review). A weak positive relationship between occupational status and work

Table 8.22: Frequency tabulations for work satisfaction

Item	No of resps	%
Work satisfaction		
relatively high satisfaction	19	38
some dissatisfaction to moderately high satisfaction	22	44
dissatisfaction to moderate satisfaction	7	14
usually dissatisfied	2	4
Total	50	100
Reasons for lack of job satisfaction		1
too much work	2	4
low occupational status	3	6
lack of mental stimulation or development of new skills	3	6
low qualification of superior, leads to difficulties with expertise	1	2
too many superiors to answer to	1	2
not permitted to do the job as respondent desires (lack of autonomy)	1	2
lack of support from subordinates	1	2
Work related sources of stress		1
none	14	28
poor/ineffective departmental management	3	6
lack of teamwork	7	14
lack of authority and decision-making	2	4
lack of commitment by subordinates	5	10
answering to more than one	4	8
excessive workload	12	24
inefficiency of colleagues	2	4
dealing with a great number of people daily	4	8
negative reaction to traffic/security staff	2	4
students are untidy and demanding in residences	2	4
poor/ineffective University management	3	6
resistance to change by University management	1	2
lack of student commitment	1	2
unfair work allocation	2	4
insufficient secretarial support	2	4
post graduate research supervision	1	2
lack of recognition for work contribution	2	4
unfair treatment by superior	3	6
supervisor inadequately qualified	2	4
piecemeal work, so little control over quality of completed work	1	2
completing paperwork for administration	2	4
computer system	1	2
open plan office	2	4
fears of loss of job due to illness	1	2

Key: 1 - no total as respondents answered more than 1 category



satisfaction was indicated (correlation coefficient 0.35, r-squared 12.47%,  $p = .001$ ), but this is not regarded as a significant finding. Finally, a weak positive relationship between educational status (correlation co-efficient -0.3, F-ratio 6.04,  $p = .01$ ) was established.

A number of crosstabulations were performed between work satisfaction and other variables (Table 8.23). It was found that respondents who felt that they had enough authority and responsibility, were involved in decision-making and felt that their superior shared information relating to their work with them, tended to also to derive more satisfaction from their work. White respondents also tended to derive relatively higher levels of satisfaction from their work than Africans. This is again likely to be related to the positions that the different groups held in the organisation.

Respondents were asked about the sources of frustration in their work. Their responses are shown in Table 8.22. Many of them related to poor or ineffective management, lack of teamwork to achieve organisational goals, and staff shortages. The issue of control in the organisation was raised in the responses, when 2 respondents said that they were not given enough authority or allowed to make decisions, and a further 4 found their work very frustrating as they answered to a number of superiors. In the latter case, this occurred when departments or sections shared a support post.

Table 8.23: Crosstabulations between work satisfaction and authority, responsibility, decision-making and communication.

Item	Relatively high satis- faction	Moderate satisfac- tion	Dissatis- faction /moderate satisfac- tion	Dissatis- faction	Tot
Authority					
yes, usually	17	20	3	1	41
occasionally	2	2	4	1	9
not usually	0	0	0	0	0
Total	19	22	7	2	50
Responsibility					
yes, usually	17	22	4	1	44
occasionally	1	0	3	1	5
not usually	1	0	0	0	1
Total	19	22	7	2	50
Decision making					
fully involved	9	4	1	0	14
consulted	8	13	0	0	21
occasionally consulted	1	4	5	1	11
not at all	1	1	1	1	4
Total	19	22	7	2	50
Communication					
all relavent info shared	12	5	3	0	20
information and answers needed	2	11	1	0	14
only info superior feels is needed	3	5	3	1	12
minimum info	2	1	0	1	4
Total	19	22	7	2	50

### 3.4.2 Recognition

The recognition of members' work contribution in an organisation is an important part of their feeling of fulfilment in their work. This was assessed in this organisation by asking members about the extent to which they felt that their contribution was valued by their immediate superior. Answers were coded as either "yes" or "no", with 74% answering in the affirmative. The Chi-squared test demonstrated that the results were statistically significant ( $p = 6.88515E-4$ ) and it is therefore concluded that most members of the organisation do feel that their work contribution is valued.

However, although 74% of them felt this way, their reasons for this perception are disconcerting (Table 8.24). Only 28% received a written or verbal expression of appreciation, and a further 8% said that their superior was supportive of their work and so must feel that they were doing a good job. In 10% of cases, the respondents felt that because they were regularly re-allocated the job or received no negative feedback, their work performance must be valued. These superiors were obviously unaware of the importance of regular direct feedback on work performance in order to motivate their staff.

Of even more concern was the fact that another 10% said they did not know how their superior felt about their performance as the superior was too busy with his or her own work, had little contact with the respondent or seemed disinterested. The 12% of respondents who perceived that their work was not valued felt this way because they only experienced criticism or interference instead of support of their superior, were given more

Table 8.24: Frequency tabulations for recognition

Item	No of resps	%
Perception of work being valued by superior		
yes	37	74
sometimes	8	16
no	4	8
do not know	1	2
Total	50	100
Reasons for perceptions		
yes - verbal/written expression of appreciation	14	28
yes - supportive of work	4	8
yes - inference	5	10
do not know - little contact or interest	5	10
no - poor relationship with superior	3	6
no - no support, just interference or criticism	2	4
no - loaded with work, without taking account of respondent's current workload	1	2
Possibility of recognising work by other means		
yes	20	40
no	2	4
do not know	28	56
Total	50	100
Possible means of recognising work		
improved departmental management and support	8	16
improved benefits	1	2
increased leave allowance	2	4
promotion	3	6
personal and professional development opportunities	1	2
decreased workload	6	12
permission to perform outside contract work during off-peak periods	2	4
Satisfaction with job rating system		<sup>1</sup>
yes	11	28
no	13	33
do not know	15	39
Total	39	100
Reasons for dissatisfaction with job rating system		<sup>2</sup>
Peromnes system is not a fair rating system	10	37
Peromnes system is unsuitable for a service organisation	2	7
Peromnes system requires constant review	1	4
do not know - their jobs still have to be rated according to the Peromnes system	4	15
do not know enough about the system to comment	11	41

Key:

1 - percentage calculated for a total of 39 respondents

2 - percentage calculated for a total of 27 respondents

work by their superior without account being taken of their current workload, or else had a poor relationship with the superior. Again, there is evidence of very poor management techniques from these responses.

In view of the economic constraints on the organisation at the time of the survey and the fact that it was unlikely that salaries would be increased, respondents were asked whether there was any other way that their work contribution could be formally recognised. Of the 20 who said yes, 8 said that improved management would be appreciated. When questioned further they indicated that this included more encouragement and support from their superiors. Six of them felt that a reduction in workload would help. This highlights the perception of many of them that they are increasingly being expected to work harder for less remuneration or benefits.

One positive suggestion, which the researcher felt should be investigated by upper management is the encouragement of personal and professional development. For example, programmes to teach literacy and increase their educational status would be appreciated by workers in the lower occupational categories. At present, members' educational costs are only subsidised if the course is related to their work. As one messenger/clerical assistant with a Standard 10 remarked, he did not know of any formal course that is offered to provide advancement in this position! He wished to study towards a degree, but the lecture times took place during his working hours and he therefore saw little opportunity for his advancement.

When the non-academic respondents were asked about their perception of the system used to rate their jobs, only 28% were satisfied with it. Many of them did not understand or know about it, and those who disapproved of it felt that it was unsuitable for this type of organisation, required regular review or was unfair. At the time of the survey there was resistance from many of the staff to the Peromnes system that was being used for job rating and ERO No. 2 had commissioned its own investigation into members feelings. The main objections seemed to derive from the feeling that the rating that their jobs were given did not recognise their responsibilities adequately.

#### 3.4.3 Promotion

In reply to questioning about respondents' perceptions of the system of promotion, only 26% felt satisfied with it (Table 8.25). Nearly half said they were dissatisfied with it and a quarter said they did not know what system there was or understand how it worked. This is a serious problem as the achievement of promotion is recognised as an important factor in self-actualisation at work for many people. In fact, only 26% of the respondents felt that they could anticipate promotion at some stage and yet 80% desired it. The Chi-squared test was applied, but did not show that the values were statistically significant at the 95% confidence limit. This would therefore require further investigation to establish the extent of such perceptions amongst the population. Nevertheless, it is still worthwhile considering their comments as they must indicate some of the feelings in the organisation.



Table 8.25: Frequency tabulations for promotion

Item	No of resps	%
Satisfaction with promotion system		
yes	13	26
no	24	48
do not know	13	26
Total	50	100
Reasons for evaluation of promotion system		<sup>1</sup>
yes - has had recent promotion	3	6
yes - Departmental Head is fair so system works well	1	2
yes - fair, based on ability	1	2
no - unfair system	21	42
no - no guidelines	1	2
no - no structure in department for promotion	1	2
no - people are not moved often	1	2
do not know - does not understand system	13	26
Anticipation of promotion		
yes	13	26
no	24	48
do not know	13	26
Total	50	100
Reasons why promotion is not anticipated		<sup>2</sup>
no further posts	11	30
retirement imminent	2	5
works on seniority basis so will have to wait	1	3
lack of education	5	14
conflict with superior	4	11
unfair system	9	24
works part-time so no promotion possible	1	3
too old to expect promotion	1	3
does not desire promotion so will not apply for it	1	3
does not know how system works	1	3
Desire for promotion		
yes	40	80
no	6	12
do not know	4	8
Total	50	100
Reasons for desiring promotion		<sup>1</sup>
yes - increase income	19	38
yes - recognition of work performance/qualifications	16	32
yes - to perform a more interesting job	5	10
yes - to be given more responsibility	4	8
yes - to have a lighter workload	1	2
yes - higher status in organisation	4	8
no - top of scale/hierarchy so nothing to be promoted to	2	4
no - retirement imminent	1	2
no - unlikely to get further promotion so does not desire it	1	2
do not know - does not know what it would entail	1	2
do not know - does not want more than has presently	1	2

Key: 1 - no total as respondents answered more than one category  
 2 - percentage calculated for total of 37

There was strong criticism from both academic and non-academic staff because they felt that there were insufficient guidelines concerning the criteria for promotion or that the system was unfair. Over half the academics criticised the emphasis by the university on research rather than on teaching prowess.

One of the major reasons that respondents felt that they were unlikely to get promotion was that there were limited senior posts within the department. This will occur in any organisation and in a teaching organisation it becomes a problem as teaching staff have to move into management positions if they wish to rise in the organisational hierarchy, which many of them do not wish to do.

Of the 9 respondents who said the system was unfair, six in the lower occupational status categories believed this because they did not have the educational qualifications to advance in the organisation, nor did they have access to opportunities to remedy the situation. This highlights the possibility of offering further staff development opportunities as a reward for work contribution.

The main reasons for desiring promotion were to increase their income (38%) and to obtain recognition of their work performance or an additional qualification that they had recently acquired (32%). Two other reasons were to move into a position where the work was more interesting, to be given more responsibility or to improve their status in the organisation.

The promotion system, particularly in terms of criteria for selecting people into management positions would need to be examined carefully in Section Four of the strategy, in view of many of the responses elicited during the survey. Many of the negative comments relate to poor management and it would seem that this aspect, which relates to the social environment of the organisation, needs to be strengthened.

#### 3.4.4 Development

Some of the needs for staff development in the organisation have been identified and discussed in 3.4.2 and 3.4.3. In addition, the data relating to many of the work variables has indicated the need to strengthen management skills, particularly in terms of interpersonal relations and staff motivation. This information would be added to that collected in Section Four of the strategy.

### 3.5 Safety

#### 3.5.1 Hazards

The respondents were asked to list the hazards that they were exposed to in the course of their work. The researcher questioned them further, based on the knowledge of the type of work being performed. Some respondents faced threats to their personal safety and these were included under psycho-social hazards. For example, the possibility of an assault on one of the respondents who had to attend evening functions associated with work and travel home on her own late at night.

The information from these questions would then be added to that collected in Section Three of the strategy. It could also be used to evaluate their

knowledge of hazards to improve the effectiveness of the safety programme in the organisation.

The variation in the type of work that was carried out by members of the organisation is reflected in the range of hazards that were listed (Table 8.26). It emphasises the need to involve workers throughout the organisation in health and safety issues and to have an effective safety programme, so that the workplace does not act as a stressor on health.

It was interesting to note that 4 of the respondents complained that they experienced hayfever, itchy eyes, headaches, faintness in their work environment and they attributed this to the fact that the building was sealed and air-conditioned. Another respondent, who worked in the same building, complained of having had a cold for some months despite treatment. The researcher felt sure that this was an allergic rhinitis. These are classic symptoms of "sick building" syndrome and the situation should be investigated further.

When psycho-social hazards are considered, the relationships within the organisation must also be taken into account. In 3.6.5, the comment is made that colleagues are the main source of support for respondents' personal and work-related problems in this organisation. There are signs that management needs to work on building social cohesion in the organisation, and this is borne out by respondents' comments in a number of sections of the assessment that they do not feel valued in the organisation .

Table 8.26: Frequency tabulation of the hazards in the workplace

Category of hazard	No of resps	%
Hazards - physical		
electricity	3	6
X-rays	1	2
heat (including hot water)	5	10
cold	1	2
air temperature and humidity	4	8
vibration (from floor polisher)	5	10
Hazards - chemical		
dusts	9	18
exhaust fumes	1	2
acids	2	4
acetylene	1	2
glues and adhesives (PVA and animal)	2	4
potassium pericyanide	1	2
potassium carbonate	1	2
hydrocyanoin	1	2
sodium thiosulphide	1	2
insecticides	4	8
herbicides	4	8
fungicides	4	8
wide range of chemicals (work in a chemical store)	3	6
rock splinters/fragments	1	2
Hazards - biological		
microbiological	7	14
insect stings	7	14
animal bites (snakes)	7	14
plants (poisons, irritants)	7	14
Hazards - mechanical/ergonomic		
knives, cutting machines, guillotines	8	16
moving machinery	3	6
lifting heavy loads	7	14
long periods of bending	3	6
long periods of standing	7	14
falls from ladders or scaffolding	1	2
walking up and down stairs a lot	7	14
use of a personal computer for long periods	5	10
joint and muscle strain from cleaning jobs	8	16
Hazards - psychological		
stress due to overload or more than one superior	15	30
boredom	2	4
criticism from colleagues who are practising their profession and not teaching it	1	2
claustrophobia from being indoors all the time	1	2
rudeness from people respondent must deal with	1	2
Hazards - social		
low occupational status in the organisation	3	6
racial discrimination	1	2
poor interpersonal relations in the department	2	4
bomb threats and robberies	1	2
being out at night functions for work is unsafe for a woman	1	2

Note: No totals given as respondents were exposed to more than one hazard.



### 3.5.2 Safety programme

Data on the safety programme and its adequacy in terms of work hazards would be collected in Section Three of the strategy. To augment this, a number of questions centred around the respondents knowledge and evaluation of such a programme were asked in the instrument (Table 8.27).

In this organisation, only 40% of respondents were aware of a safety programme and 8% stated that there was no programme in their department. Seven respondents were involved in the programme, with 3 being safety representatives for their department. Staff working in one of the laboratories said that although there was no formal safety programme, they were all very careful to observe safety precautions and there had only been a very small number of incidents over the last 10 years. However, the Chi-squared test demonstrated that the results for awareness of the occupational safety programme could have been due to chance ( $p = 0.157289$ ). The fact that so many of the respondents were unable to identify the safety representative, and that the finding is likely to be similar in the population is of great concern.

Only 32% of the sample knew who the safety representative for their department was, and 8% were adamant that there was no safety representative. Responses were combined to indicate a knowledge of the safety representative (either "yes" or "no") and the Chi-squared test was performed. It was concluded that the values were not due to chance and that the difference was statistically significant ( $p = 0.0109095$ )



Table 8.27: Frequency tabulations for safety programme

Item	No of resps	%
Knowledge of safety programme		
yes	20	40
no	4	8
do not know	26	52
Total	50	100
Involvement in safety programme		
yes	7	14
no	42	84
no formal programme, but staff are aware of safety precautions	1	2
Total	50	100
Description of involvement in safety programme		
safety representative	3	6
provides basic first aid	1	2
general laboratory safety enforcement	3	6
especially aware of safety in laboratory	1	2
Safety representative known to respondent		
known	16	32
exists but identity not known	2	4
no safety representative exists	4	8
none, but all staff involved (laboratory)	1	2
do not know	27	54
Total	50	100
Nearest person with CPR skills		
clinic sister, geographically close	11	22
clinic sister, geographically far away	30	60
person in department - close	3	6
person in department - far away	4	8
do not know	2	4
Total	50	100
Perceived effectiveness of safety programme		
yes	11	22
partially/sometimes	3	6
no	2	4
do not know	4	8
Total	20	40
Reasons for perceived ineffectiveness of safety programme		
inadequate safety representative/officer	1	2
infrastructure		
lack of knowledge of fire fighting	1	2
inadequate facilities for transport of injured or ill people	1	2
do not know what is done or when inspections are conducted	2	4
unsafe working conditions due to building operations	3	6
Total	8	16
Methods for improving the safety programme		
more attention and emphasis needed by the University administration	3	6
more effective decision-making by the University administration regarding safety	1	2
regular tetanus immunisation for gardeners		
improved ventilation	1	2
improved lifting system for machinery	1	2
fire fighting training and inspections	1	2
first aid training and inspections	1	2

Note: No total for last group as respondents gave more than one response

Respondents were also questioned about the nearest person with cardio-pulmonary resuscitation skills, in the event that someone in their department required such assistance. Only 6% knew of someone in their department, close to where they worked, who had these skills. Most of them (60%) said they would have to call the clinic sister, but she was far away from them. The clinic sister would have been close enough to assist 22% of respondents. "Close" was defined as being able to reach the area within 4 minutes. This is regarded as a serious problem in the organisation as it is unlikely that timeous help would be available should someone need it. A programme of training should be instituted as a matter of urgency.

Of those respondents who knew of a safety programme in their department, only 11 considered that it was effective. Some of the reasons given for the ineffectiveness of programmes included a lack of first aid and fire-fighting skills, inadequate safety representative infrastructure in the organisation, and not knowing what was actually done in the programme. Suggestions for improvement focussed on the need for the university administration to put more emphasis on the need for safety and to implement an effective programme. The researcher would support this evaluation.

### 3.5.3 Protective clothing

Only 11 of respondents were required to use protective clothing or equipment. The type of protective clothing or equipment varied, as shown in Table 8.28. Most of them were careful to use it, but as is often the case, 2 of them did not always use it as it was uncomfortable or they would have to carry it

Table 8.28: Frequency tabulations for protective clothing

Item	No of resps	%
Required by management to wear protective clothing		
yes	11	22
no	39	78
Total	50	100
Type of protective clothing/equipment to be used		
boots	7	14
gloves	8	16
earmuffs	1	2
facemask	1	2
apron	2	4
goggles	5	10
tweezers	1	2
Total	25	50
Actual use of protective clothing/equipment		
yes, always	9	18
usually	1	2
sometimes	1	2
Total	11	22
Reasons for not using protective clothing/equipment		
uncomfortable	1	2
would have to carry them for long distances to work site in the field - difficult and uncomfortable	1	2
Total	2	4

for long distances when conducting fieldwork. The researcher was concerned to find that one of the respondents who was working with dangerous chemicals wore a face-mask and yet the filters were changed very

infrequently. Furthermore, he did not have the facilities to wash his overalls at home and the department did not take steps to ensure that he had a clean overall daily. It was felt that this respondent was most definitely at risk and the situation should be rectified as a matter of urgency. It was quite probable that the supervisory staff were not sufficiently aware of the hazards and precautions to be taken, but ignorance is not a defence. The researcher took steps to feed this information to the appropriate authorities.

#### 3.5.4 Injuries on duty

An analysis of injuries in duty (IODs) showed that 26% of respondents had experienced such an injury. These results were statistically significant ( $p = 6.88515E-4$ ). The IOD type and site varied amongst respondents from this organisation as would be expected in view of the range in the nature of the work performed in it. No single department had a significant number of IODs. Similarly, the way in which they occurred and could have been prevented also varied. (See Table 8.29).

Just over half of the respondents who experienced an IOD actually reported it, and when they did report it the person they told was the university clinic sister. Those who failed to report it said they were unaware of the need to do so or considered that the injury was too minor to warrant such action. Respondents who did report their IOD said that they were not aware that anything transpired as a result of their report. This reinforced the notion that it was not worth reporting an IOD. Employees in this organisation must be told to report an IOD, however small, as there may well be sequelae and there would be

Table 8.29: Frequency tabulations for injuries on duty (IOD)

Item	No of resps	%
Respondents who have had an IOD		
yes	13	26
no	37	74
Total	50	100
Type of IOD		
cuts and lacerations	3	6
bruises	3	6
burn (heat)	1	2
burn (chemical)	1	2
burn (RF)	1	2
sprain	1	2
wood splinter	1	2
back injury	2	4
corneal laceration	1	2
spider bite	1	2
IOD site		
body	3	6
back (lumbar region)	2	4
arm (artery)	1	2
hand	1	2
finger	4	8
leg	2	4
foot/ankle	1	2
eye	1	2
various	1	2
How IOD occurred		
slipped on stairs or walkway	4	8
lifting heavy machinery	1	2
fell down a bank	1	2
bumped into something	1	2
collecting and crushing rock specimens	1	2
premature ignition of chemicals	1	2
using sharp instruments	2	4
cleaning	1	2
do not know	1	2
How IOD could have been prevented		
not possible, according to respondent	4	8
better equipment	2	4
more people to assist with lifting	1	2
more attention to safety precautions	3	6
wearing protective clothing	2	4
proper drainage of surfaces	1	2
avoid polishing of walkways	1	2
avoid crowding of work areas	1	2
IOD reported		
yes	7	14
no	5	10
do not know	1	2
Total	13	26
Person whom IOD was reported to		
University clinic sister	7	14
Reason for not reporting IOD		
not aware of need to	2	4
minor injury, felt it was unimportant	3	6
Total	5	10



no record of the injury for a claim to be made. Similarly, investigations by the safety representative or committee must be made into IODs.

The conclusion to be drawn from these results is that the current safety programme is ineffective. Respondents were largely unaware of what was being done. The perception that safety in the workplace is an issue that is confined to industry was most evident.

### 3.6 Support

Section Four of the strategy will yield most of the information pertaining to support in the organisation. However there are a few items in the instrument that relate to this aspect.

#### 3.6.1 Conditions of service

Although the conditions of service will be established from Section Four of the strategy, a few items in the instrument yielded pertinent information. Members of the organisation, who were temporary employees, were not entitled to the same benefits as permanent staff. Principally, this referred to their eligibility for the pension scheme, medical aid scheme, housing subsidy and fee remission, lower leave allowances, and shorter periods of notice of termination of employment.

Most of the respondents (82%) belonged to the organisation's "in-house" medical aid scheme. Those who were not members fell into the lower income categories or belonged to a spouse's scheme. Of those who belonged to it, 78% were usually satisfied with its



benefits. Those who were not always satisfied (22%) felt this way because they believed that the premiums were too high, benefits were inadequate for optometrists' and psychologists' services, or that their use of it did not warrant the membership costs.

Despite the negative comments about the benefits of the scheme, none of the four respondents who reported a hospital stay in the previous twelve months had been required to meet any of the costs personally. Therefore, at the time of the survey, it was concluded that the scheme was reasonably effective for the respondents who belonged to it.

In the pilot study it was established that academic staff were not allocated a specific number of days for annual vacation leave as they received sabbatical leave periodically. Time off for this purpose was at the discretion of the Head of Department, so they were not included in the analysis of leave taken. The analysis revealed that at the time of the survey, which was in the last three months of the year, most non-academic respondents had used up their 10 days of compulsory leave. The mean number of days left was 4.03 and the S.D. was 5.25. However, when the cumulative leave was considered, the number of days of leave which had been accrued ranged between 0 and 70 days, with the mean being 24.88 days. The S.D. was 16.22, showing that there was a great variation in the amounts of leave that respondents had accumulated. To a certain extent, this large number of accumulated days is to be expected as the purpose of this leave is to accumulate it for special reasons such as an extended overseas holiday. However, 55% of respondents stated that only sometimes or rarely could they take their leave when they wished to. This was mostly

because they had to take their leave during students' vacations. Pressure of work and lack of relief staff was the reason cited by 18% of respondents. Therefore, many respondents had accumulated large amounts of leave with little chance of being able to take it. In recognition of this problem, the university administration instituted a system of payment for accumulated leave, shortly after the survey. The drawback is that people need vacations to rest and relax, or their health and productivity will be adversely affected. Those respondents who said they could not take leave easily, stated that they experienced quantitative overload and reported negative health signs as a result.

The use of sick leave by respondents is discussed in detail in 4.3.5. Five respondents had used over 20 days in the preceding year. If that rate had continued, their three year cycle of sick leave would have been exhausted very quickly. Three respondents had needed lengthy hospital stays due to illness or a motor vehicle accident, but two had used the leave to attend hospitals or clinics for chronic conditions. In most cases the sick leave provision in the organisation was adequate, and it was known that the university administration would be flexible in special cases of need.

### 3.6.2 Employee facilities

When the 11 working mothers were asked whether they had been able to make satisfactory arrangements for the care of their children whilst they were at work, all of them answered in the affirmative. The university provided a child care centre for employees children and this had certainly been of assistance to them.

Other information regarding employee facilities will be collected in Section Four of the survey.

3.6.3 Employee representative organisations

The sample for the survey was stratified on the basis of membership of employee representative organisations as discussed in detail in Chapter Seven. The piechart in Figure 8.13 shows the distribution clearly.

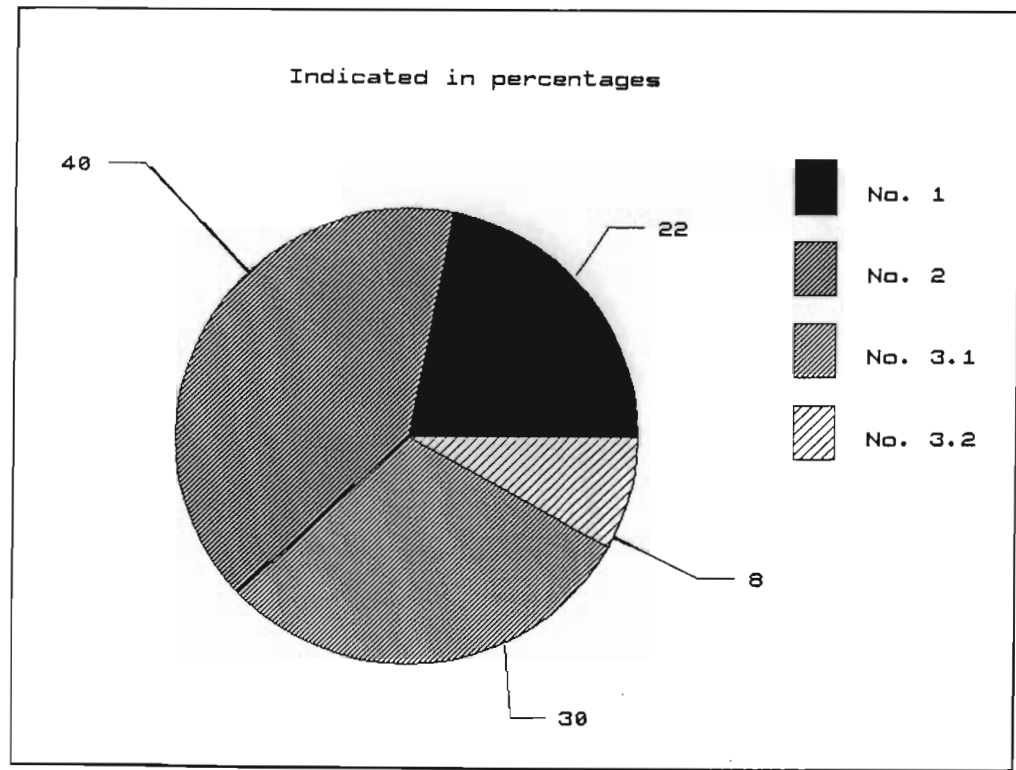


Figure 8.13: Piechart indicating membership of employee representative organisation

#### 3.6.4 Health care

The university provided a clinic for the health of students. However, employees were permitted to use the clinic if they desire.

All but three of the respondents knew of the health service on the clinic. Of these, 22% used the service often and 48% used it occasionally (Table 8.30). The type of complaints varied, but were minor.

Respondents who used the clinic did so because it was close and convenient (68%) and did not cost them anything (24%). Other reasons given included the fact that they did not have to wait long to be treated, that they used it for minor ailments which they felt did not require the attention of a doctor, that the care was effective and acceptable and when they needed to obtain a letter of referral to a state or provincial clinic. The respondents who used it often were in the lower occupational status and income categories, who had to otherwise use public health services. However, those who occasionally used it were drawn from all the categories.

The majority of respondents who did not use the clinic (11) had access to their own private doctor or other services. One of them felt that the clinic staff were not interested in the employees.

When asked if there were any other health services that could be offered on the campus for employees, a variety of answers was received. The most frequent request was for a supervised exercise programme, and this came from respondents who perceived themselves as being unfit and overweight. Numerous requests were

Table 8.30: Frequency tabulations for health care in the workplace

Item	No of resps	%
Use of the clinic		
yes, often	11	22
sometimes	24	48
not usually	15	30
Total	50	100
Reasons for not using the clinic		
did not know of service	3	6
has not needed to use it, has own private doctor or access to other services	11	22
clinic staff are disinterested	1	2
Total	15	30
Reasons for using the clinic		
close and convenient	34	68
colleagues advised respondent to use it	1	2
minor complaint, did not need to go to doctor	3	6
low cost	12	24
required letter of referral to state hospital	1	2
quick	2	4
perceived care given as effective and acceptable	2	4
Need for additional services in the workplace		
yes	23	46
no	10	20
do not know	17	34
Total	50	100
Type of service required		
extended service - move doctor consulting time for employees	5	10
extended service - geographically	4	8
extended service - regular screening and surveillance of employees	3	6
extended service - monitoring and prevention of work hazards	2	4
extended service - nursing staff available for all hours that employees work	3	6
educational programmes for employees - first aid	1	2
educational programmes for employees - literacy and development	1	2
educational programmes on health for employees	2	4
improved service by showing more interest in employees	3	6
supervised exercise programme for employees	6	12
improved recreational facilities	1	2

Table 8.30 (contd.): Frequency tabulations for health care in the workplace

Perceived potential benefits of additional services		
enable self-care	3	6
early detection of health problems	1	2
improved fitness through exercise	6	12
adequate health care for employees	9	18
reduce time spent at state health services	2	4
prompt, effective care for emergencies	4	8
convenience for employees	2	4
protection of employees health	2	4
improved health of employees	2	4
improved social cohesion in the organisation	3	6
Health problems of respondents using the clinic		<sup>1</sup>
colds/influenza	7	20
asthma	1	3
tonsillitis	1	3
ears syringed	1	3
burn	2	6
shingles	1	3
skin rash	2	6
conjunctivitis	1	3
foreign body in eye	1	3
corneal laceration	1	3
contraception	2	6
musculo-skeletal problem	4	11
headache	2	6
gastritis	2	6
constipation	1	3
not feeling well	1	3
toothache	1	3
spider bite	1	3
injured finger	1	3
blood pressure check	1	3
letter of referral to principal hospital	1	3

1 - percentage calculated for a total of 35 respondents who used the clinic

made for an extended service for employees in terms of more consulting time with the doctor, longer hours of operation, geographically extended due to the large area which the campus covered, regular screening, and



monitoring and prevention of work hazards. Many respondents also asked for more educational programmes regarding health education in general, literacy and development, and first aid. Three respondents felt that the service could be improved by showing more interest in the health of employees.

The perceived benefits of these additional services showed insight into many of their needs. What is interesting to note is the fact that three of them felt that a broadened service would improve self-care, thus indicating an internal locus of control (see 4.1.2). The most common benefit cited was that employees would have more adequate care than they currently had access to, and these responses came from respondents who used the public sector of the health care services.

Respondents were asked whether they would participate in a worksite health promotion programme, and 80% said that they would. These results were found to be statistically significant (Chi-squared test  $p = 2.02908E-5$ ). The respondents were from all occupational categories, predominantly men (63%). Those who would not do so, said they did not need to know more (6%), did not have time (6%), would prefer to receive reading material (2%), would like to know more about how it was structured before making a decision (4%) or were due to retire (4%). They were mainly in the upper occupational status categories.

Table 8.31 shows the aspects that respondents indicated they would be interested in learning more about in order to improve or protect their health. The most common choice was stress management, and this was selected by 11 men and 13 women who belonged to the

Table 8.31: Aspects of interest to employees for inclusion in a health promotion programme in the workplace

Aspect	Yes		No	
	No.	%	No.	%
Evaluation and monitoring of work environment to promote a healthy work environment	21	42	29	58
Physical fitness and exercise programme	22	44	28	56
Nutrition	15	30	35	70
Weight control	12	24	38	76
Smoking cessation	13	26	37	74
Communication skills	21	42	29	58
Leadership skills	21	42	29	58
Stress management	24	48	26	58
Management and prevention of depression and suicide	3	6	47	94
Alcohol and substance abuse prevention and control	4	8	46	92
Accident prevention	9	18	41	82
First aid	19	38	31	62
Prenatal and postnatal health care	1	2	49	98
Pre-retirement preparation	12	24	38	76
Back care	12	24	38	76
Cardio-pulmonary fitness (to prevent heart and circulatory disease)	14	28	36	72
Cardio-pulmonary resuscitation	9	18	41	82
Hypertension (high blood pressure) screening and management	17	34	33	66
AIDS	4	8	46	92
Family planning or spacing	1	2	49	98

upper three categories of occupational status. In keeping with statements made earlier under additional services required, a physical fitness and exercise programme was desired by 44% of respondents. These

were mostly in the upper occupational status categories, whites and equal numbers of men and women. The evaluation and monitoring of the work environment was indicated by 42% of respondents, 67% of whom were men and mostly Whites. Other popular choices were communication and leadership skills. Very few wished to learn more about AIDS and family planning and spacing, often indicating that they were tired of hearing about it. Only one respondent wanted to know about prenatal and postnatal care.

#### 3.6.5 Social support

In order to assess the degree of social support in the organisation for members, respondents were asked about the support they had received during times of worry over personal or work-related problems. With regard to personal problems, 68% said they had experienced great worry over personal problems whilst working in this job. Table 8.32 shows the support they received. The greatest support came from colleagues. Section or unit heads had been supportive towards 56% of respondents and Departmental Heads had only been supportive for 27%. However, 24% said they had not asked the Department Head for support and 65% said they had not asked the Personnel department for assistance.

When work-related problems were considered, colleagues again provided the greatest amount of support to the 32 affected respondents, which is to be expected. Section or Unit Heads were perceived as usually supportive by 50% of these respondents and sometimes supportive by 9% of respondents. The support from Departmental Heads was low, with only 38% perceiving that they had usually been of assistance and 22% finding them supportive sometimes. It is felt that to be effective managers, Section or Unit Heads and

Departmental Heads should be perceived as being supportive over work-related problems in particular and it is disconcerting to note how few were regarded in this light. This accords with the fact that when the sources of frustration mentioned in 3.4.1 are examined, it is evident that there are many signs of weak middle and upper management in the organisation. It was also interesting to note how few respondents had asked their employee representative organisations for assistance and the reasons for this reluctance need to be explored further.

Table 8.32: Support with personal and work-related problems

Person	Yes usually		Sometimes		Not usually		Not requested	
	No.	%	No.	%	No.	%	No.	%
Support with a personal problem								<sup>1</sup>
colleagues	22	65	9	27	3	9	0	0
section/unit head	19	56	2	6	5	15	2	6
departmental head	9	27	10	29	7	21	8	24
personnel	1	3	3	9	8	24	22	65
department								
others	5	15	0	0	0	0	0	0
Support with work-related problems								<sup>2</sup>
colleagues	20	63	7	22	5	16	0	0
section/unit head	16	50	3	9	4	13	2	6
departmental head	12	38	7	22	8	25	5	16
dean of faculty	2	6	2	6	1	3	1	3
relative vice-principal	2	6	0	0	3	9	26	81
employee	0	0	0	0	3	9	29	91
representative								
organisation								
others	1	3	1	3	0	0	3	9

Key:

- 1 - percentage calculated for a total of 34 respondents  
 2 - percentage calculated for a total of 32 respondents

### 3.6.6 Job security

When respondents were questioned about job insecurity, 62% said they did not worry about losing their job, 24% said they sometimes worried and 14% said they often worried about it. Those who were concerned were not confined to the lower occupational categories. Some of them worried because they felt that as less skilled workers their jobs would be the first to be reduced, whilst those in the upper categories feared that their jobs would go as universities rationalised academic departments. The skilled workers worried because the university was increasingly using private contractors for repairs and maintenance. All of them were worried that they would find it difficult to get other jobs in the prevailing economic climate.

A significant association ( $p = 6.21555E-3$ ) was found between age and job insecurity (Kruskal-Wallis test), showing that the older workers tended to worry more about losing their jobs. This could have been because older people usually have more responsibility for other family members at this stage of life or that they fear that their skills and abilities are less valued.

## 4. Health variables

These variables were examined to assess their influence on the health status and behaviour of respondents.

## 4.1 Beliefs

### 4.1.1 Concept of health

According to the model in Chapter Six, one of the major influences on health and illness behaviour is the way in which people conceptualise health. In the sample from this organisation, 44% of respondents defined health in clinical terms (absence of disease), whilst a further 46% used a role performance definition (being able to work). Only 2% defined it in terms of adaption and 8% saw health as high level wellness and actualisation. The difference between these values was statistically significant (Chi-squared test,  $p = 2.4836E-7$ ).

A number of crosstabulations were conducted to find out if there were any characteristics that could be associated with the way that respondents defined health and these are shown in Table 8.33. When gender was examined, it was found that 15% of women as opposed to 3% of men defined it in terms of actualisation. Most women used a role performance definition whereas most men used a clinical definition.

The majority of African respondents used a clinical definition (63%), the majority of Indians used a role performance definition (75%) and only marginally more Whites used a role performance definition (42%) as opposed to a clinical definition (39%). Those respondents using an adaptation or actualisation definition were all Whites.



Table 8.33: Cross tabulations for health definition

Variable	Clinical	Role perf.	Adaptation	Actualisation
Gender				
male	47	47	3	3
female	40	45	0	15
Ethnic group				
African	63	37	0	0
Indian	25	75	0	0
White	39	42	4	15
Age				
< 18	0	0	0	0
18 - 24	100	0	0	0
25 - 34	50	38	12	0
35 - 44	39	56	0	5
45 - 54	46	31	0	23
55 - 64	44	56	0	0
65 and over	0	100	0	0
Educational status				
< Std 1	100	0	0	0
Std 1	0	0	0	0
Std 2	0	0	0	0
Std 3	100	0	0	0
Std 4	0	100	0	0
Std 5	0	0	0	0
Std 6	50	50	0	0
Std 7	0	0	0	0
Std 8	0	100	0	0
Std 9	67	33	0	0
Std 10	40	40	0	20
Cert/Dip	42	50	0	8
Degree	29	50	7	14
Occupational status				
professional	25	50	8	17
intermediate	71	29	0	0
skilled non-manual	22	64	0	14
skilled manual	0	100	0	0
partially skilled	43	57	0	0
unskilled	89	11	0	0
Desire to learn more about protecting health				
yes	50	43	2	5
no	14	57	0	29
do not know	33	66	0	0
Willingness to participate in programme				
yes	48	45	2	5
no	20	80	0	0
do not know	40	20	0	40
Regular health checks				
yes	37	52	0	11
no	52	39	4	4
Perception that health status can be improved				
yes	47	38	3	12
no	37	63	0	0

Note: Figures expressed as percentages

Most respondents in the 35 to 44 year age group defined health in terms of role performance (56%) as opposed to using clinical definition (39%), whereas the converse held true for most of the other age groups.

When occupational status was considered, a clinical definition predominated amongst the lower educational status groups, with other definitions being used more in the upper groups. A weak negative association was found (correlation coefficient  $-0.34$ ,  $r$ -squared 11.8%,  $F$ -ratio 6.4,  $p = .001$ ). A similar pattern was found for educational status, with a weak positive association resulting from a regression analysis (correlation coefficient  $0.34$ ,  $r$ -squared 11.8%). Therefore, respondents who used other definitions tended to be in the higher education categories. A weak positive association was also found between ethnic group and this variable (correlation coefficient  $0.3$ ,  $r$ -squared 9.44%,  $F$ -ratio 5.00,  $p = .02$ ). This meant that Africans tended to use a clinical definition, whilst those using other definitions were more likely to be Whites. No association between gender and age was found.

Many respondents also mentioned the dimensions of health in their definitions. The physical dimension was included by 40%, the mental dimension by 34%, the social dimension by 8% and the spiritual dimension by 2%. Again, it was mostly those in the upper educational and occupational status categories who used the latter three dimensions. A few (8%) stated that health involved all three dimensions.

These findings are in keeping with the literature review and the discussion of the use of the model in

Chapter Six. The information contained in this section will be used in a number of places throughout the discussion on health variables.

#### 4.1.2 Locus of control

Various items yielded information that pertained to respondents' locus of control. Firstly, they were asked whether they felt that their health status could be improved, to which 68% answered "yes". This result was not due to chance (Chi-squared test,  $p = 0.0109095$ ). These respondents were then asked how they could achieve this and if the resources currently available to them were adequate for this. In Table 8.34, it can be seen that the ways in which respondents perceived that their health status could be improved tended to relate either to improvement of lifestyle, work problems or access to effective health care. Of particular note is the fact that 26% of them felt that they needed more exercise. This need was supported when their exercise patterns were examined (see 4.4.6).

Only 24% of respondents felt that they would be able to improve their health status with the resources and facilities currently available to them. The reasons that 26% felt that they could not do so were lack of time, the need for education and lack of control especially with regard to the causes of work-related problems. The particular resources or assistance needed are shown in the table. They all indicate that an effective occupational health programme is required.

Crosstabulations were carried out between the perception that health status could be improved and a number of variables. It was found that more women (75%) than men (63%) felt that their health status

Table 8.34: Frequency tabulations relating to the improvement of health status and desire to learn about health protection and promotion

Item	No of resps	%
Means of improving health status		
lose weight	2	4
improve diet	5	10
stop or reduce smoking	2	4
have more exercise	13	26
complete studies, so workload is reduced	2	4
control blood pressure	1	2
obtain more sleep/rest	1	2
decrease workload	5	10
control cholesterol level in blood	1	2
settle marital conflict problems	1	2
stop worrying about finances	1	2
change of work	1	2
more trust and support from HOD	2	4
more authority and autonomy	1	2
have own office, not open plan office	1	2
bladder repair	1	2
removal of skin lesions	4	8
combatting side effects of DXT	1	2
obtain effective treatment for sinusitis	1	2
obtain effective treatment for backache	1	2
obtain effective treatment for leg ache and weakness	1	2
none/do not know	14	28
Adequacy of current resources		
yes	24	48
no	13	26
do not know	1	2
not applicable	12	24
Total	50	100
Additional resources required		
education on how to lose weight	2	4
education on how to stop/reduce smoking	2	4
education on first aid	1	2
supervised exercise programme	11	22
access to adequate health care services	1	2
transfer to different job	1	2
more assistance with workload	5	10
time off to obtain treatment, has too much to do	1	2
more authority at work to reduce frustration	1	2
financial assistance	3	6
does not know who to go to for treatment	2	4
Desire to learn about health protection and promotion		
yes	40	80
no	7	14
do not know	3	6
Total	50	100

Table 8.34 (contd.): Frequency tabulations relating to the improvement of health status and desire to learn about health protection and promotion

Reasons for not wishing to learn more about protecting/promoting health		
do not need to learn more, already doing what they can	6	12
lack of time	1	2
depends how programme is structured in terms of time and respondent's needs	2	4
would prefer to receive reading material	1	2
retirement imminent	1	2
Needs indicated by respondents		
preventive care in general	4	8
stress management	6	12
diet	2	4
supervised exercise programme	2	4
prevention of health problems in older women	2	4
health risks in an office environment	1	2
coping with sick building syndrome	1	2
back care	1	2
first aid	1	2
prevention of communicable diseases	1	2

could be improved. Respondents who defined health in terms of adaptation or actualisation all perceived that their health could be improved. When educational status was examined, the number of respondents who perceived that their health status could be improved tended to increase as educational status increased. For example, 50% of respondents with less than Standard One felt that it could be improved compared with 60% of those who had a diploma or certificate and 67% of those with a degree. This probably relates to that fact that people with a higher educational level have been more able to obtain better paid work, thereby affording them more control over their lives, as discussed in 3.6.1.2 of the literature review.

With regard to ethnic group, only 50% of Africans and 63% of Indians felt that it could be improved compared with 81% of Whites. This marked difference is not unexpected as the Whites had better access to resources, occupied the higher educational status categories and historically have been more able to exert control over their lives due to political policies in the country.

Respondents were asked to indicate their perceptions of their health risk for 4.4.1. The researcher then explained the risk possibilities to those whose responses had been inconsistent with their family history, lifestyle and past and current health status. For example, one respondent was overweight, had an elevated blood pressure, was between 34 and 45 years of age, had little exercise and felt extremely stressed. However, he did not feel that he was at any risk of developing a health problem.

They were then asked whether they felt that it was possible to take any preventive action to avert the problem. Only 48% answered that it was possible, 2% said it was not possible, and 22% did not know (Table 8.43). The reasons given by many of them for not being able to take the action or being unsure about it were most commonly that they did not have time, did not know what to do or that they could not control the causes of the problem. The psychological dimension of health was evident in their answers.

These responses were rated according to the appropriateness of their suggested action. It is interesting that in 30% of cases, the action was inappropriate. There was a definite need for health education.



Again, 8% of them felt that they would be not prepared to take this action as they did not have enough time. It was concluded that they did not regard the risk to their health as serious or immediate enough to take the action, or that they did not feel that they would be able to change their lifestyle in terms of the time they spent on certain activities. The latter contention was supported by the fact that in all these cases the respondents had stated that they experienced quantitative work overload. Their locus of control in relation to this aspect of their lives was most certainly external. Therefore, although they perceived that their behaviour would influence their health status thus indicating an internal locus of control in this regard, they seemed unable to take the action.

When asked whether they would be interested in learning more about how to protect their health, 80% indicated that they would desire this (Table 8.33). The most common reason given for not desiring this was that the respondent either felt that nothing could be done to improve their health status or that they were already doing all that could be done to improve their health status. Yet again, many stated that they did not have enough time to attend a programme of learning activities (see 3.6.4 as well).

An analysis of what they would like to learn more about is contained in Table 8.34. The respondents who made these suggestions were all in the upper educational and occupational status categories. The suggestions indicate an internal locus of control.

The findings for locus of control accord with the points made in Chapter Six on the use of the instrument.

## 4.2 History

The data collected for most of the items in this section would be used for assessing individuals rather than for the organisation as a whole.

### 4.2.1 Inherited

The age distribution for respondents in the sample represented a normal curve and was not skewed. Therefore, they are not regarded as an aging population and many of the chronic, inherited conditions will not have become apparent yet.

### 4.2.2 Illness

The illness pattern amongst respondents was in keeping with the epidemiological trends associated with socio-economic status. Therefore, lower educational and occupational status respondents more commonly gave a history of serious illness due to communicable conditions. Similarly, older respondents in the upper educational and occupational status groups were already exhibiting evidence of the so-called diseases of affluence.

### 4.2.3 Injury

Much of the discussion for 4.2.2 is relevant for this section.

### 4.2.4 Hospitalisation

Only four respondents, three women and one man,

had been hospitalised in the previous twelve months. The women had been hospitalised for injuries due to a motor vehicle accident, a hysterectomy and the freeing of abdominal adhesions, whilst the man had been treated for bronchitis and uncontrolled diabetes.

#### 4.2.5 Sickness absence

Over half the respondents (52%) had not had any sick leave in the year of the study. A further 38% had missed between 5 and 10 days of work. The mean number of days missed was 4 and the S.D. was 9.02. The large variation was due to the effect of one respondent who had missed 55 days of work. When this respondent was removed, the mean dropped to 2.87 and the S.D. was 5.25.

The results for sickness absence are shown in the frequency polygon in Figure 8.14. The health problems that led to the absence are listed in Table 8.35. By far the most common cause was upper respiratory tract infections, as is the case in most workplaces. Although the loss to the organisation would have been considerable for the lower occupational categories, the respondents in the upper categories would have had to make up the time lost in order to complete their work as it is unlikely that other staff would have been able to relieve for them.

It is worth noting that two of the respondents were comfortable enough to inform the researcher that they took time off saying they were sick when in fact they were not. One of them went to arrange an identity book for her daughter. The other had not used any sick leave in the year and as his retirement was imminent he took a few days off. This is in line with commonly

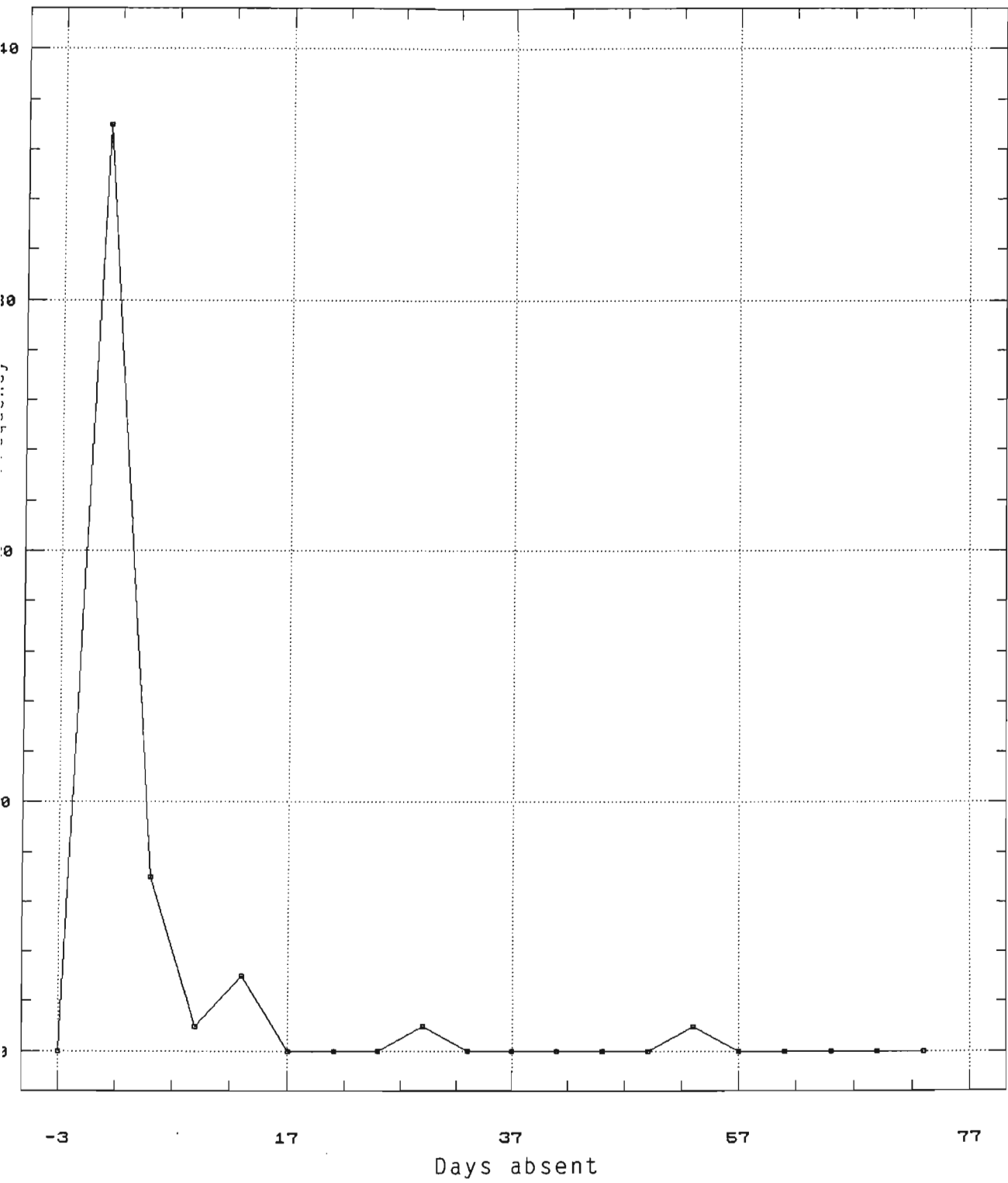


Figure 8.14: Frequency polygon of sickness absence

Table 8.35: Frequency tabulation of reasons for sickness absence

Complaint	No of resps	%
Colds and influenza	14	28
Tonsillitis	1	2
Sinusitis	1	2
Bronchitis	1	2
Asthma	2	4
Otitis media and interna	1	2
Gastro-enteritis	2	4
Cystitis	1	2
Backache	1	2
Diabetes	1	2
Hiatus hernia	1	2
Repair if abdominal hernia	1	2
Torn ligaments in ankle	1	2
Attend state clinic for hypertension	1	2
Arrange daughter's ID book	1	2
Took time off as had not used any and retirement imminent	1	2
Do not know	1	2

encountered workers' perceptions that they should use their sick leave allowance regardless of whether they are actually ill. It also supports the contention that sick leave and sickness absence must be differentiated.

When gender was considered in relation to sickness absence, a marked disparity was found. The mean number of days off for women was 4.3 and the S.D. was 7.37, whereas the mean for men was 1.9 and the S.D. was 2.8. The number of days taken off by women were greater and varied far more than for men. Therefore, it is possible that although the presence of signs and symptoms was similar for both groups, women are more likely to stay away from work for health problems or more ready to assume the sick role. This accords with

findings in other studies reported in the literature review (3.4.2.1). However, this is just a suggestion and would need to be investigated in far more detail for this organisation. Another possibility is that working mothers have more illness.

An examination of ethnic group revealed a marked difference in the number of respondents who had not taken any sick leave. Only 25% of Africans and Indians had not taken time off, compared to 77% of Whites. In the literature study it was reported that people in the higher occupational status categories tend to have lower sickness absence rates (Section 3.4.2). This was supported in this organisation, when it was found that the number of respondents who had not had any sickness absence declined as the level of occupational status dropped. Of the respondents in the professional category, 44% had not taken any time off, in contrast to 19% in the intermediate group, 31% in the skilled non-manual group, 4% in the skilled manual group, 4% for the partly skilled and none in the non-skilled group. It should be remembered that the majority of respondents in the upper occupational status categories were Whites. This accounts for the disparity in sickness absence amongst the ethnic groups.

The reasons for sickness absence amongst migrant workers in the sample were examined, but there was no indication that they experienced more health problems that could be related to residential variables than other respondents. However, this is only one aspect, as it does not necessarily follow that they would have taken time off for these problems.

Sickness absence could be monitored over a period of time and in detail for the organisation, to identify



the effect of work and residential variables on health. However, the sample was too small in this survey to establish any clear patterns.

#### 4.3 Current status

##### 4.3.1 Subjective

When respondents were asked to evaluate their health status, most described it as good (50%), 4% said it was very good, 26% said it was satisfactory, 16% felt it was fair, and 4% said it was poor. Many of them said their health was satisfactory or good because they were not sick. This provided further evidence of their use of a clinical definition of health. Others operated from an adaptation definition when they said that they were well except for some longstanding health problem, such as a limp or diabetes.

##### 4.3.2 Objective

The basic measures to assess objective health status provided the results described below.

Weight for height: Respondents' heights and weights were evaluated in terms of the Metropolitan Life Scales (1983). Although it is realised that these were developed for the American population, there are no reliable figures available for South African people and these scales are used by local dieticians.

In most cases height for weight was appropriate (46%), a small number of the sample was underweight (18%), but an alarming 36% were overweight. Figure 8.15 shows this distribution graphically.

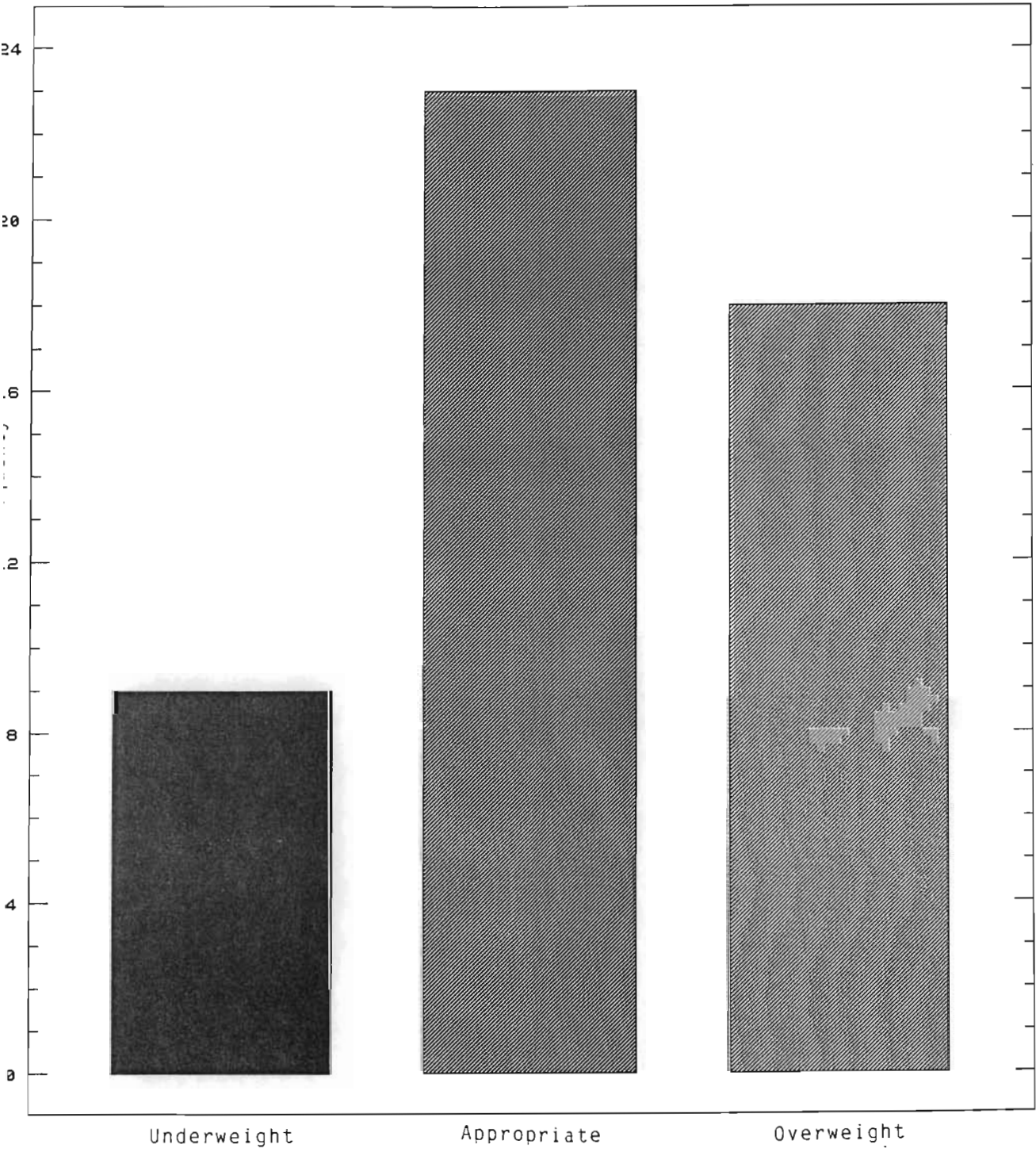


Figure 8.15: Barchart of weight for height

Further analysis showed that equal numbers of males and females and Africans and Whites were overweight, and that they were between the ages of 35 and 64 years of age. Weight appeared to rise with age, as would be expected. However, the respondents who were overweight and in the upper occupational categories were mostly men (academic staff) and the overweight in the lower categories were mostly women (cleaners in the residences).

When the respondents who were underweight were examined, it was found that they were mostly Africans (56%). Amongst the Indian respondents, 25% were underweight and 25% were overweight. In contrast, 32% of Africans were underweight and 50% overweight, whilst 8% of Whites were underweight and 31% overweight. In the latter group the pattern accords with an affluent population. Of the underweight respondents, more non-academic staff than academic staff were underweight (89% as opposed to 11%). Similarly, they were mostly in the lower occupational status categories. These results indicate that members' exercise and dietary habits of members would require further investigation and action to prevent health problems.

**Pregnancies:** The mean number of pregnancies for respondents was 1.36, with the minimum being 0 and the maximum being 9. The S.D. was 2.15. Of the women who had been pregnant, 45% had experienced between 1 and 3 abortions or stillbirths. These had been in women between the ages of 35 and 64 years, and the highest incidence was in African women. The mean number of abortions and stillbirths was 0.28 and the S.D. was 0.67, showing that there was little variation between respondents.

The average number of live births was 2.5. However, when ethnic group was taken into account, the average number for Whites was 1.9, for Indians 2 and for African women was 3.8. In the latter case, this is considerably higher than the desired rate of 2.1 for the country (Department of National Health and Population Development, 1991). However, it accords with the demographic picture for South Africa. Similarly, the number of pregnancies rose as occupational status dropped (negative association). A detailed discussion of the number of children belonging to respondents, both male and female, is contained in 2.6.

Pulse: Figure 8.16 shows the distribution of pulse rates for the sample. Those with the lower rates were either manual workers or obtained a lot of exercise through recreational sport. They all fell within the range of normal. The mean pulse rate was 79.12 and the S.D. was 3.66, showing that rates did not vary greatly.

Respiration: Two respondents had slightly rapid respiration rates, both of them with a history of asthma. There was little variation amongst respondents as the mean rate was 21.4 and the S.D. was 2.258.

Blood pressure: Most (74%) of the respondents were normotensive and 4% were hypotensive. However, 22% had blood pressures above normal. Of these, only 4% knew that they had raised blood pressures. When assigned a stress level (see 4.4.6), 55% of the were mildly or moderately stressed (4.4.6).

The distribution is shown in Table 8.36 and Figure 8.17.

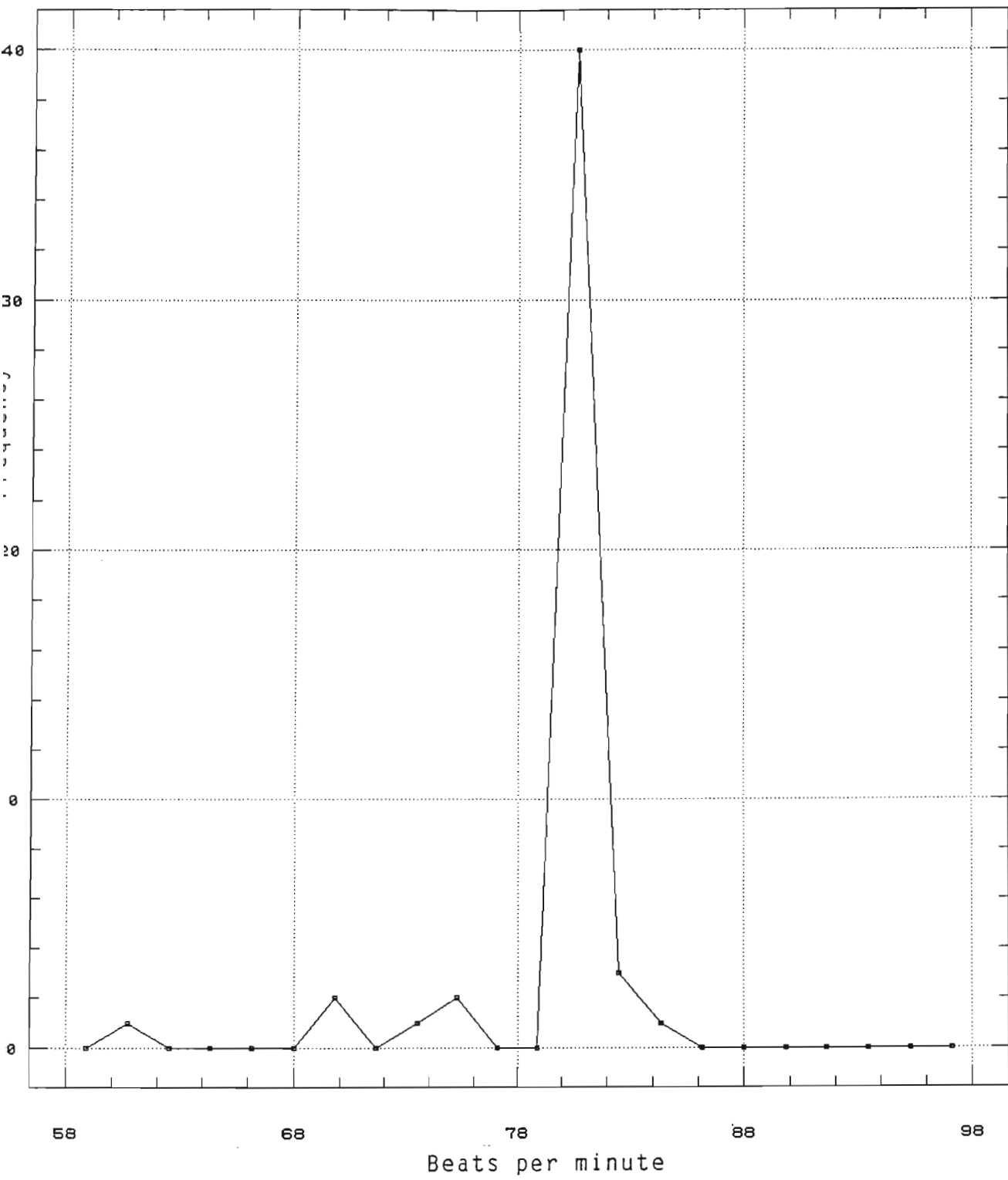


Figure 8.16: Frequency polygon of pulse rates

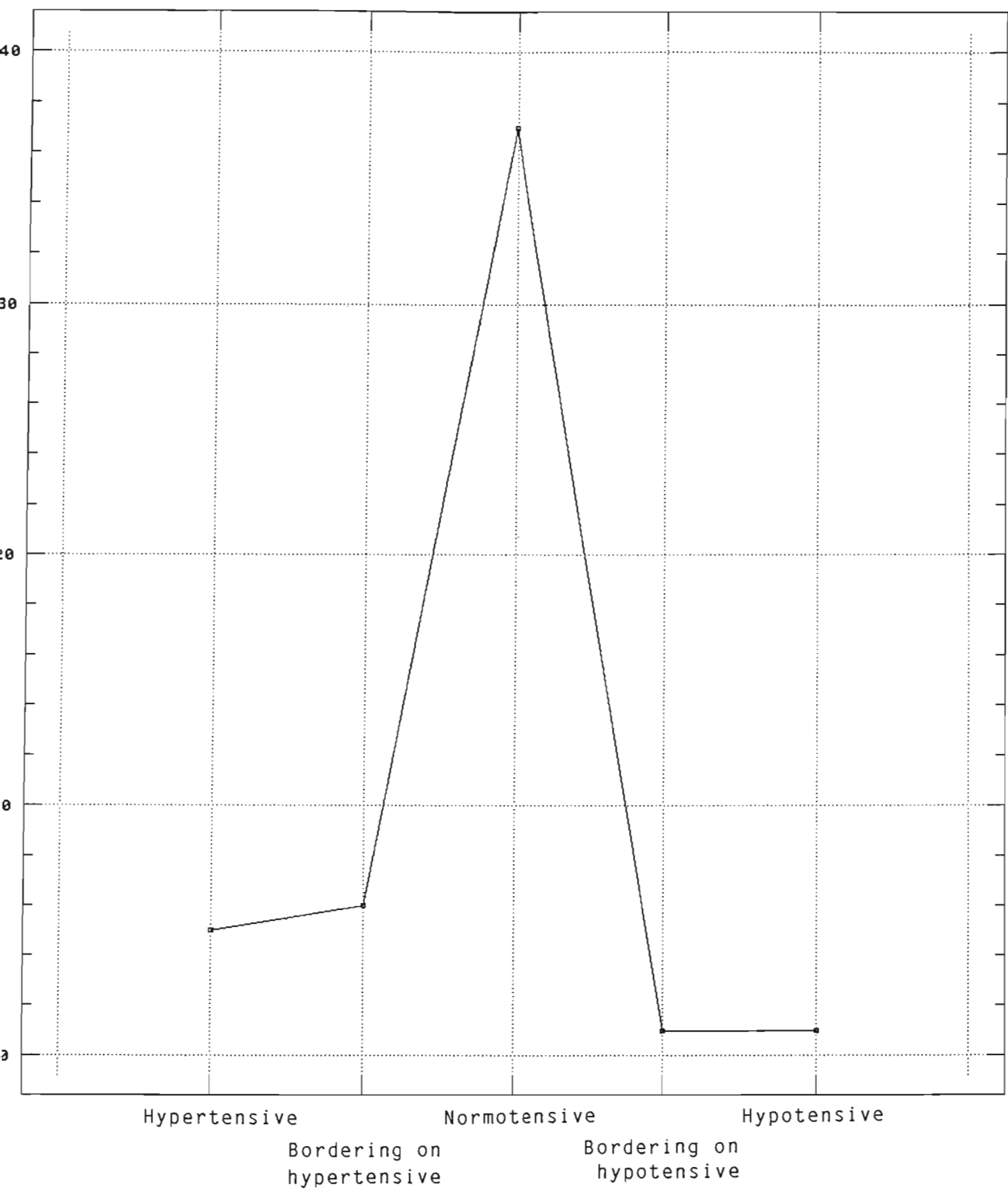


Figure 8.17: Frequency polygon of respondents' blood pressure



Table 8.36: Frequency distribution of respondents' blood pressure

Category	No of resps	%
Hypertensive moderate - diastolic 105-119mm Hg, isolated systolic $\geq$ 160mm Hg severe - diastolic $\geq$ 120mm Hg	5	10
Bordering on hypertensive diastolic 95-104mm Hg	6	12
Normotensive diastolic 75-94mm Hg	37	74
Bordering on hypotensive diastolic 60-75mm Hg	1	2
Hypotensive diastolic < 60mm Hg	1	2
Total	50	100

(According to the S.A. Hypertension Society, 1989)

It was found that 4 respondents who had blood pressures that were bordering on hypertension, had not had their blood pressure taken within the last three years. Most (43%) of the respondents who had not had their blood pressure taken for over three years were unskilled workers and it was clear that they did not understand the need to do so. When it was explained why it was important they all expressed the desire to have it monitored. It was disconcerting that there were respondents of all occupational status categories

who had neglected to have themselves checked in this time period and many of them would most certainly have been exposed to education about the need for it. It is most likely that they simply did not accept that they were susceptible to such problems. Therefore, it is necessary to monitor all employees regardless of whether they have higher educational levels or access to health care services.

Two of the academic staff had blood pressures that were bordering on hypertensive, they were both overweight, lacked exercise and felt overworked. One of them smoked heavily and drank large amounts of alcohol at times. They were both assessed as being at risk for cardio-vascular disease. Four of the respondents with raised blood pressures were skilled non-manual workers, two were partly skilled and three were unskilled workers. In the latter case, all were women working in the residences who were overweight. One of the skilled workers mentioned above, was a women who was overweight, lacked exercise and felt extremely overloaded (quantitative) at work. She was not easily able to take leave as there was nobody to relieve her and although she had previously taken diuretics for a raised blood pressure was not currently taking medication or being monitored. She was also assessed as being at risk of cardio-vascular disease.

A negative correlation between blood pressure weight for height (co-efficient  $-0.51$ ,  $r$ -squared  $26.62\%$ ,  $F$ -ratio  $17.41$ ,  $p = .0001$ ; blood pressure categories went from high to low in numerical coding, whilst weight increased as the number of the category rose). This finding would be anticipated on clinical grounds. A weak positive association between ethnic group and blood pressure was also found (correlation

co-efficient 0.34, r-squared 12.18%, F-ratio 6.65,  $p = 0.012$ )) whereby the incidence of raised blood pressure was higher amongst Africans. Regressions were performed for age, workload, alcohol intake, exercise, smoking and caffeine intake, but no associations were established.

**Personal health risks:** A series of questions were asked to establish the presence of particular signs and symptoms (Table 8.37). Many of these related to those experienced when a person feels stressed and the responses were used to assign respondents a stress level rating, as discussed in 4.4.6. The data from this item would mainly be used for the health assessment of the individual member of the organisation. However, on a collective basis, trends may become apparent. For instance, common signs and symptoms recently experienced by respondents included pain in various places (58%), headaches (30%), insomnia (20%), fatigue (20%), indigestion, cough and depression (16% for each). It is probable that these same signs and symptoms would be common amongst any group of people, however the prevalence could be monitored, especially for the purposes of identifying health problems associated with work.

The responses to the questions on personal health risks were cross checked against their answers regarding health problems in other parts of the instrument for reliability. In all cases they were congruent.

Table 8.37: Frequencies of the experience of symptoms and signs (personal health risks)

Category	Yes (1)		No (2)	
	Freq.	%	Freq.	%
1 Wart/mole	2	4	48	96
2 Loss of weight	2	4	48	96
3 Fatigue	10	20	40	80
4 Insomnia	10	20	40	80
5 Headaches	15	30	35	70
6 Night sweats	1	2	49	98
7 Pain *	29	58	21	42
8 Sore	0	0	50	100
9 Bleeding	2	4	48	96
10 Discharge	3	6	47	94
11 Lump/thickening	1	2	49	98
12 Dysphagia	4	8	46	92
13 Indigestion	8	16	42	84
14 Hoarseness of voice	6	12	44	88
15 Cough	8	16	42	84
16 Bladder habits	3	6	47	94
17 Bowel habits	1	2	49	98
18 Constipation	1	2	49	98
19 Diarrhoea	1	2	49	98
20 Menorrhagia	0	0	50	100
21 Hopelessness/helplessness	1	2	49	98
22 Depression	8	16	42	84

(\* Headaches are included in this, therefore 14 respondents (28%) experienced pain in other parts of their body)

Studies in the literature survey found that women experienced higher rates of morbidity and reported more signs and symptoms than men. A cursory examination did not find this for the sample. It revealed that women reported an average of 2.4 signs and symptoms in the list of items, as opposed to 2.3 amongst men. This could be investigated further.

Another item that related to the assessment of objective health status, was the experience of a health problem in the two weeks preceding the interview. On an individual level, it provided information that may

not have been identified by the list of questions on personal health risks. Furthermore, their responses concerning days of work missed due to the problem were used to check those given for days of sick leave during the preceding year. In all cases, the former were within the limits of the latter.

On a collective level, 40% had experienced a health problem in the previous two weeks. In most cases these were the more common minor problems and did not require time away from work (Table 8.38).

Table 8.38: Frequency tabulations relating to recent health problems

Item	No of resps	%
Recent health problem		
yes	20	40
no	30	60
Total	50	100
Type of recent health problem		<sup>1</sup>
upper respiratory tract infection	3	15
asthma	1	5
toothache	2	10
gastro-enteritis	2	10
musculo-skeletal (sprain, backache etc)	4	20
headache	4	20
cystitis	1	5
bronchitis	1	5
sinusitis	1	5
epigastric pain	3	15
lower abdominal pain	1	5
palpitations	1	5
constipation	1	5
Days of work missed due to recent health problem		<sup>2</sup>
1 day (cystitis)	1	
10 days (bronchitis, asthma)	1	

Key:

- 1 - Percentages calculated for a total of 20 respondents
- 2 - Not calculated

A scale was developed, as shown in Table 8.39, and respondents were assigned a rating for objective health status based on the data derived from the health variables relating to health. Where a respondent had more than one health problem, the more serious one in terms of life threat was given preference.

In the majority of respondents (28%) there were no observable or identifiable health problems present. However, of concern were the 16% who had previously diagnosed major health problems that were uncontrolled. These included two respondents who had raised blood pressures, one who had a history of duodenal ulceration and was experiencing epigastric pain regularly for which he was taking large amounts of analgesics, and a respondent with severe, uncontrolled asthma.

The objective health status rating was then crosstabulated with gender, ethnic group, age occupational status, workload, work satisfaction, decision-making at work and subjective health status. The results for gender showed that 37% of males had no identifiable health problems, 10% had early evidence of a health problem developing, and 13% of them had a previously diagnosed major health problem that was uncontrolled. In contrast, 15% of women had no identifiable health problem, 20% had early evidence of a minor problem developing, and 20% had previously diagnosed major health problems that were uncontrolled. It seems that the women respondents had higher morbidity rates than men, but this could be due to the fact that women tend to seek the assistance of health care workers more than men, as suggested in the literature study (3.4.2.1). For instance, only 10% of women had previously undiagnosed health problems compared with 17% of men. Similarly, far more women



than men wished to and actually consulted a doctor for a health problem experienced in the previous two weeks (see 4.4.5). However, the numbers in the study are too small to make anything other than tentative suggestions.

Table 8.39: Frequency tabulation of objective health status

Category	No of resps	%
No observable/identifiable health problems at present	14	28
Early evidence of a minor (non life-threatening) health problem developing	7	14
Previously diagnosed minor (non life-threatening) health problem present - controlled	6	12
Previously diagnosed major (life-threatening) health problem present - controlled	4	8
Previously diagnosed minor health problem present - uncontrolled	4	8
Previously diagnosed major health problem present - uncontrolled	8	16
Previously undiagnosed minor health problem present - uncontrolled	7	14
Previously undiagnosed major health problem present - uncontrolled	0	0
Total	50	100

Of the 38 respondents who perceived their health as good or satisfactory, 13 were rated on the objective health status scale as having no identifiable health problem, 6 had early evidence of a minor problem developing, and 7 had a previously diagnosed minor or major health problem that was controlled. Of the remaining respondents, 6 had uncontrolled, previously diagnosed problems - 3 with major and 3 with minor problems. A further 6 had an undiagnosed, uncontrolled minor problem. Therefore, 12 (32%) perceived themselves as healthy, although a health professional would have recommended that they needed care of some type. The possibility of these respondents taking action, in terms of self-care is not high as they would not have perceived the need for it. The regression analysis found no association between perceived and objective health status evaluation, which accords with the literature review (Chapter Three and Chapter Five) where it is noted that the evaluations of health professionals and the clients themselves are not always congruent.

The 2 respondents who rated their health as very good, would have been similarly rated by a health professional. One had no identifiable health problem and one had a previously diagnosed, minor health problem that was controlled.

Of those who perceived their health status as fair, 1 had early evidence of a problem developing, 2 had previously diagnosed minor health problems that were controlled, 4 had previously undiagnosed, major health problems, and one had a previously undiagnosed, uncontrolled, minor problem. In the case of the 2 who felt that their health was poor, one had a previously diagnosed, uncontrolled major problem and one had a

previously diagnosed, uncontrolled minor problem. Therefore, although there would have been some congruence between them and a health professional that care was needed, it is unlikely that the one would have been rated as having poor health. This highlights the difference in the way people perceive health and their experience of health problems.

There were no other trends in the results for the other crosstabulations.

#### 4.3.3 Longstanding illness/disability

Table 8.40 contains a list of the longstanding health problems found amongst respondents. The information would be used mainly for the assessment of the individual member. Although the severity of these problems varied considerably, many of them had the propensity to affect the respondent's quality of life. It was evident from responses throughout the interview, that most of them had adapted to these conditions and knew how to prevent aggravating them. Similarly, 15 of them perceived themselves as healthy despite the presence of the condition, thus demonstrating that there was an element of adaptation in the way they defined health.

Various crosstabulations were performed between this variable and others. The only clear trend was that the incidence of problems increased with age, which is to be expected. Marginally more Whites (88%) complained of longstanding problems compared with 75% of Indians and 69% of Africans.

Table 8.40: Frequency distribution of long-standing illness or disability

Complaint	No of resps	%
Hayfever/rhinitis	5	10
Laryngitis	1	2
Sinusitis	2	4
Asthma	3	6
Bronchitis	3	6
Hoarseness of voice due to DXT	1	2
Dysphagia	1	2
Hiatus hernia	1	2
Duodenal ulcer/epigastric pain	4	8
Spastic colon	1	2
Diabetes	4	8
Membranous nephropathy	1	2
Anorexia	1	2
Lower abdominal pain	1	2
Constipation	1	2
Diarrhoea	1	2
No teeth, difficult to eat	1	2
Cystocele	1	2
Dysuria	1	2
Headache/migraine	5	10
Hypertension	3	6
Epilepsy	1	2
Gout	1	2
Neckache	4	8
Backache	15	30
Arthritis/joint pain/limp	10	20
Tenosynovitis	1	2
Skin allergy	1	2
Poor eyesight	1	2
Chalazion	1	2
Impotence	1	2
Fatigue	1	2

#### 4.3.4 Work-related health problems

When respondents were asked whether their previous or current work could have contributed to the longstanding health problem, a number felt that this was possible (Table 8.41). The results for the contribution of previous work were found to be statistically significant (Chi-squared test,  $p = 9.54702E-6$ ) but not for the contribution of present work ( $p = 0.420113$ ).

In particular, the women who worked as cleaners, both in previous and current jobs felt that the continual physical work had contributed to the musculoskeletal problems they experienced. Five of the clerical workers stated that the excessive amount of work that they had to do caused their headaches and neck-ache. They related this to the use of a computer and word-processing tasks to a large extent.

Three of the 23 respondents felt that they would possibly have to change their work as it was aggravating their health problem. One felt this was because he worked outdoors and suffered from asthma, one had severe backache and had to continually lift a heavy object in the course of his work and the third felt she needed a less strenuous job owing to her age and hypertension. The first and third of these respondents also felt that they may have to stop working eventually.

Table 8.41: Frequency tabulations relating to work contribution to health problem

Item	No of resps	%
Contribution of previous job to health problem		
yes	6	12
no	34	68
not applicable	10	20
Total	50	100
Type of work in previous job		
domestic cleaner	4	8
waiter	1	2
labourer in cement works	1	2
Total	6	12
How previous work could have contributed to health problem		
physical wear and tear	4	8
prolonged standing and walking	1	2
absorption and inhalation of cement dust	1	2
Total	6	12
Contribution of current job to health problem		
yes	23	46
no	18	36
not applicable	9	18
Total	50	100
Nature of current work		
clerical/secretarial	5	10
photographic work	1	2
bookbinding	1	2
electrician	2	4
cleaner	4	8
gardener	2	4
messenger/assistant	1	2
traffic attendant	1	2
technician	1	2
academic - lecturer	4	8
academic - geologist	1	2
Total	23	46
How current work could have contributed to health problem		
musculo-skeletal strain	10	20
exposure to elements/outdoor job	1	2
too much to do	8	16
airconditioning	2	4
prolonged/excessive talking	1	2
excessive close-up work for eyes	2	4
allergy to chemicals	1	2
rock fragments	1	2
Total	26	52
Possible need for change of work		
yes	3	6
no	37	74
not applicable	10	20
Total	50	100
Possible future effect on work ability		
yes	2	4
no	37	74
do not know	2	4
not applicable	9	18
Total	50	100



#### 4.3.5 Medication

Information from the items in this section is important for assessing an individual's health status and needs. It also provides some insight into how they are using the health care system. In Table 8.42 it can be seen that 20 respondents had taken 14 different

Table 8.42: Frequency tabulations relating to medication

Item	No of resps	%
Category of prescribed medicine used		
anti-inflammatory	3	6
analgesic	1	2
bronchodilator	2	4
anti-epileptic	1	2
urinary antiseptic	1	2
hypotensive	2	4
antacid	1	2
cortico-steroid	1	2
nasal decongestant	1	2
antibiotic	2	4
antidiarrhoeal	1	2
oestrogen	2	4
hypoglycaemics	2	4
Person prescribing the medicine		
medical practitioner in private practice	11	22
medical practitioner from public health sector	2	4
specialist in private practice	1	2
professional nurse or medical practitioner at workplace clinic	1	2
Category of over-the-counter medicine		
analgesic	15	30
antihistamine	3	6
vitamin and mineral supplement	3	6
antacid	2	4
Person who suggested using the OTC medicine		
respondent	19	38
spouse/partner	3	6
supervisor at work	1	2

types of prescribed medications between them, in the two weeks prior to the survey. Those who had stated that they had longstanding chronic conditions such as diabetes, epilepsy, hypertension and arthritis were all taking medications for these conditions and understood what they were for. This verified the information they had given in 4.3.3. These medicines were most commonly prescribed by a private medical practitioner.

Of the over-the-counter (OTC) medications, the most commonly used were analgesics, usually taken for headaches and colds. The respondent usually decided to take the medication, and only three took it on the advice of their spouse or partner and one on the advice of his work supervisor. At the time of the survey, 46% of the respondents had taken an OTC medication in the preceding two weeks.

Apart from one respondent who was taking treatment from a homeopath, no respondents reported taking traditional medicines. However, they could have been questioned more specifically about this, as will be recommended in the revised instrument.

#### 4.4 Self-care

##### 4.4.1 Perceptions of susceptibility

A large number (52%) of respondents felt that they were at risk of developing a serious health problem in view of their family history, lifestyle, past and current health status. Of the rest, 36% did not think they were at risk and 12% did not know (Table 8.43). Their responses were then rated for consistency with a health professional's evaluation of their risk. Only

Table 8.43: Frequency tabulation of perception of health risk

Item	No of resps	%
Perception of health risk		
yes	26	52
no	18	36
do not know	6	12
Total	50	100
Consistency with health risk profile		
highly consistent with health risk profile	14	28
moderately consistent with health risk profile	19	38
not consistent with health risk profile	17	34
Total	50	100
Respondent's perception of the possibility of action		
yes	24	48
no	1	2
do not know	11	22
not applicable	14	28
Total	50	100
Appropriateness of action for health problem		
highly appropriate for health risk profile	22	44
moderately appropriate for health risk profile	13	26
not appropriate for health risk profile	15	30
Total	50	100
Respondent's willingness to take action		
yes	27	54
no	4	8
do not know	1	2
not applicable	18	36
Total	50	100
Reasons for not taking action		
No time	4	8

28% were highly consistent, 38% were moderately consistent and 34% were not consistent. Therefore, over one third of the sample did not perceive themselves as susceptible to health risk and yet the perceptions of one third of the sample (not necessarily

the same respondents in both cases) were not congruent with the views of a health professional. This again highlights the disparities in perceptions and the fact that it is extremely important that the person perceives the risk or the likelihood of action being taken is reduced. The individual needs for health education becomes clear from the information derived from these items.

Another indication of respondents' perceptions of susceptibility in this organisation is their perceptions regarding the contribution of previous or current work to their health problems (4.3.4). A large number (46%) of them associated their health problems with present work, and 6% of those felt that they would need to change their work as their health would deteriorate if they continued in their present jobs.

Of concern is that 52% of respondents perceived that they were susceptible to developing a health problem and yet it seemed that many of them were either unable to take preventive action or did not perceive the risk as immediate enough to do so.

#### 4.4.2 Self-diagnosis

The majority of respondents who had taken an over-the-counter medication (83%) had decided to do so without it being suggested by anyone else, as shown in Table 8.42. Similarly, 63% of respondents who had experienced a health problem in the preceding two weeks had decided on the action to take without any advice from anyone else.

#### 4.4.3 Self-treatment

As already stated, 46% of respondents had taken OTC medication in the previous two weeks.

When respondents were asked if they would be willing to take action regarding perceived health risks (4.1.2) 54% said "yes" and 8% said "no". In the latter instance, the respondents all said that they did not have the time to take the action. For most of them, it involved relaxation and exercise.

The implications of these results are that a large number of respondents would not have been able to care for themselves without the knowledge of the conditions and the way to avoid them. Furthermore, it is an indication of respondents' workload when they feel that they would not have the time to take action, even though they would like to do so. The important point to convey to them would be that their productivity would be affected over time, if they did not have a balanced lifestyle and care for themselves.

#### 4.4.4 Use of alternative health care practitioners

Table 8.44 indicates who respondents sought help from when they were not well, during the two years preceding the survey. A total of 9 respondents had consulted alternative health care practitioners. An indication of how they used them was obtained by asking them how many times they had been to these practitioners over the previous three months, and what the nature of the health problem was (Table 8.45). The three respondents who had used an alternative health care practitioner had all previously consulted a doctor for the health problem, but had not obtained relief.

The health problems for which the respondents visited the chiropractor and homeopath were all longstanding ones, which affected their quality of life but were not life-threatening. They all said that they

did not wish to take the medication prescribed by doctors for these complaints as it did not cure the problem and had side-effects. Two of these respondents were professionals and one was in the intermediate category of occupational status, being in middle management. The respondent who had visited the chiropractor, went for a series of manipulations and found that the treatment did help with the pain. Similarly, the respondent who was seeing the homeopath felt that the treatment was helping with the dyspepsia. However, the respondent who had visited the accupuncturist for her epicondylitis (tennis elbow) had not found the treatment effective and did not intend to return. It is interesting to note that the medical aid scheme, in terms of its listed benefits, would only have re-imbursed the respondent who visited the chiropractor. Therefore, although they would have had to bear the full costs themselves, the other two had still been prepared to consult a homeopath and an accupuncturist, in the hope of obtaining relief from their health problems. These findings accord with discussion in the literature review (3.6.1.1).

Table 8.44: Frequency tabulations of person repondent consulted when not well during the previous two years

Category of person	No of resps	%
Professional nurse/doctor at work clinic	13	26
Doctor at provincial/state clinic/PHC centre	5	10
Doctor at provincial/state hospital	5	10
General practitioner in private practice	43	86
Specialists in private practice	5	10
Physiotherapist	1	2
Chiropractor	2	4
Homeopath	3	6
Traditional healer (African)	1	2
Hindu priest	2	4
Accupuncturist	1	2



Table 8.45: Frequency tabulations for nature of problem and number of visits when respondent was not well in previous three months

Person consulted	No of people	Nature of problem	
		Category	No of visits
Professional nurse/ doctor at work clinic	7	colds/flu stomach ache gastro-enteritis toothache painful legs backache	4 4 4 1 2 1
Doctor at state/ provincial hospital	3	hypertension check painful legs backache asthma, bronchitis and diabetes	3 1 1 17*
Private practitioner in general practice	16	colds/flu cough/bronchitis sinusitis dyspepsia from DXT hypertension check epilepsy check cystitis backache painful neck gastro-enteritis otitis hiatus hernia asthma diabetes	4 2 1 1 6 1 1 2 1 2 1 1 3 4
Specialist in private practice	3	painful neck backache hormone replacement therapy epicondylitis sinusitis bronchitis hiatus hernia	1 1 1 1 4 4 2
Chiropractor	1	painful neck backache	7 7
Homeopath	1	dyspepsia from DXT	2
Accupuncturist	1	epicondylitis	1

Key:

\* - This respondent was in hospital for 17 days and saw a doctor each day of his hospital stay.

#### 4.4.5 Use of health care practitioners

The health care practitioners that respondents used when they were not well during the two years preceding the survey are indicated in Table 8.46. The majority (86%) used a private general practitioner. As may be expected from the membership of the medical aid scheme, the Chi-squared test showed that this number was statistically significant ( $p = 3.55864E-7$ ) and the majority used private practitioners. However, this does not necessarily mean that the quality of care received was better. As discussed later in this section, a number of respondents did not receive consistent care.

The type of health problem for which they sought assistance varied considerably, although most of them would have been considered minor. The professional nurse or doctor in the clinic at work was consulted for minor health problems, by 26% of respondents. Those consulting specialists in private practice had in many cases been referred by a general practitioner. The specialists included an orthopaedic surgeon, gynaecologist and physician.

Table 8.47 shows the categories of doctors that respondents usually visited when they had a general health problem and their reasons for selecting them. The usage pattern is much the same as that identified in Table 8.46. It can be seen that 8 of the respondents used the doctor at the workplace clinic, mainly because they did not have to wait long and the doctor was close by where they worked. One respondent indicated that he used the work doctor if he experienced a general or minor health problem. These respondents were drawn from all income groups.

Table 8.46: Frequency tabulations for use of health care practitioners

Item	No of resps	%
Consultation of workplace doctor		
yes	8	16
no	42	84
Total	50	100
Reason for consulting workplace doctor		<sup>1</sup>
cheaper	8	100
close to work	8	100
general or minor health problem	1	13
Consultation of provincial/state clinic doctor		
yes	1	2
no	49	98
Total	50	100
Reason for consulting provincial/state clinic doctor		
close to home	1	2
Consultation of provincial/state hospital doctor		
yes	10	20
no	40	80
Total	50	100
Reason for consulting provincial/state hospital doctor		<sup>2</sup>
serious problem	8	80
less expensive than private doctor, no medical aid	7	70
Consultation of private medical practitioner (first)		
yes	48	96
no	2	4
Total	50	100
Reason for consulting private medical practitioner (first)		<sup>3</sup>
prefers own doctor/good relationship	7	15
medical aid membership	30	63
minor/general problem so first point of contact with health care system	37	77
serious problem	5	10
close to home	7	15
less expensive than other doctors	1	2
close to home in the country	2	4
quick	4	8
Consultation of private medical practitioner (second)		
yes	1	2
no	49	98
Total	50	100
Reason for consulting private medical practitioner (second)		
close to work	1	2

Key:

1 - percentages calculated for a total of 8

2 - percentages calculated for a total of 10

3 - percentages calculated for a total of 48

Table 8.47: Frequency tabulations for use of doctors for general health problems

Category of doctor	Location		Length of wait		Convenience		Reasons for incon <sup>1</sup>		Cost known		Satisfaction		Reasons for dissatisfaction	
	Categ	No	Categ	No	Categ	No	Categ	No	Categ	No	Categ	No	Categ	No
Workplace doctor 8 (16%)	<5km	8	>30m	8	yes	8	n/a	8	k/a	8	yes, usually sometimes	7 1	little confid.	1
State/prov. clinic doctor 1 (2%)	<5km	1	3hrs30m- 3hrs59m	1	no	1	long wait	1	n/k	1	yes, usually	1	n/a	1
State/prov. hosp. doctor 10 (20%)	<5km 5- 9km 10-14km 15-19km 20+km	2 2 3 0 1	3hrs30m- 3hrs59m	10	no	10	long wait	10	n/k approx k/a	5 1 4	yes, usually not usually	7 3	ineffective no rel.	2 1
Private GP (first) 48 (96%)	<5km 5- 9km 10-14km 15-19km 20+km	35 7 2 1 3	>30m 30-59m 1hr-1hr59m 2hrs- 2hrs29m	41 5 1 1	yes, usually sometimes not usually	42 3 3	works far from doctor n/a	6 42	n/k med aid approx k/a	9 8 14 17	yes, usually sometimes not usually	34 3 10	little confid. ineffective opinion ign. no referral expensive puts off	2 2 1 1 7 1
Private GP (second) 1 (2%)	>20+km	1 <sup>2</sup>	>30m	1	yes, usually	1	n/a	1	med aid	1	yes, usually	1	n/a	1

Key:

1. Incon. - inconvenience

2. This respondent saw this doctor when she was visiting her family out of town

Knowledge of cost

Med aid - medical aid rates

Approx - approximate cost known

K/a - known accurately

N/k - not known

Reasons for dissatisfaction

Little confid - has little confidence in or does not like doctor

Ineffective - has not helped to alleviate the health problem that respondent sought help for

No rel. - cannot form a relationship with the doctor as sees a different one each time

Opinion ign. - doctor does not take account of client's opinion

No referral - doctor does not like to refer client to other doctors

Expensive - doctor's charges are high

Puts off - doctor wants to put client off work too frequently

Only one respondent used a doctor at a provincial clinic or health centre. This person was an asthmatic and he went to this centre as it was close to his home and useful if he had severe bronchospasm and needed a nebulisation. However, he used a range of different doctors and the researcher therefore felt that his care lacked consistency. This respondent was a skilled non-manual worker, who belonged to the medical aid scheme.

Ten respondents used a doctor at a state or provincial hospital. They consulted these doctors when they felt that they had a serious health problem (80%) and because it was less expensive than a private doctor (70%). These respondents were all Africans or Indians, in the lower income groups, who did not belong to the medical aid scheme.

The majority of respondents used a private general practitioner at various times. Some of them were Africans who did not belong to the medical aid scheme. They consulted these doctors when they were at home, far from a public health facility or if they wanted to be attended to quickly for what they considered a less serious problem. At the time of the survey, patients could attend the large tertiary level hospital that was close to the workplace without a letter of referral from a health care practitioner. However, since then the practice has been disallowed and it is likely that some of these respondents will be using other public services that are further afield.

One of the main reasons given by respondents who regularly used a private practitioner, was that they belonged to a medical aid scheme which enabled them to use such practitioners. Another common reason for using this category of doctor was when they experienced

a minor or general health problem. They saw the private general practitioner as the first point of contact with the health care system and anticipated that they would be referred to a specialist if the problem was serious or required specialised treatment. This was in keeping with the manner in which the health care system was organised, although it was known that some doctors will refer patients more readily than others especially when pressured by their patients to do so.

Of importance to some respondents using a private practitioner (15%) was the fact that they were able to build up a relationship over time with the doctor who got to know them and their family. This is an essential for consistent health care. However, some of the respondents from the lower income groups who used a private general practitioner for convenience, did not always consult the same doctor and long periods passed between visits so that records pertaining to their health status would have been incomplete if they were maintained at all.

The reasons concerning convenience included the fact that the doctor was close to where they lived or worked, depending on whether they went directly from home or work, and that they did not have to wait for long periods to be seen as happened in some of the public health facilities.

One respondent used two general practitioners. She consulted one who was in the country, when she needed a doctor whilst visiting her family and the other when she was at her home in Umlazi. She had a long history of abdominal pain most probably due to adhesions from previous surgery and felt that she had



not been well cared for by the doctors. However, she had not been consistent in her use of them.

For the reasons given above, respondents were rated for the consistency of use of professional health care practitioners. Consistency was defined as the consistent use of one doctor or general practitioners' practice, or a health service over a period of at least two years. Thirty-eight (76%) respondents were rated as receiving consistent care. The difference in values pertaining to consistency of care were not due to chance and were statistically significant ( $p = 2.36049E-4$ ). This would be an aspect to focus on, in planning a comprehensive occupational health programme for the organisation.

When ethnic group was crosstabulated with consistency of care a marked pattern emerged. Half the Africans respondents did not receive consistent care, whilst 63% of Indians and most Whites (96%) did. This is most certainly due to disparities in access to health services. This was confirmed when the correlation coefficient was found to be  $-0.49$ ,  $r$ -squared  $-24.22\%$ , the  $F$ -ratio  $15.34$ , at  $p = .0002$ . Similarly, more respondents in the upper occupational status categories received consistent care than those in the lower categories. To illustrate this, it was found that of those receiving consistent care,  $29\%$  were professionals and only  $5\%$  were unskilled workers. Of the respondents who did not receive consistent care,  $8\%$  were professionals and  $58\%$  were unskilled workers. A regression analysis indicated this positive association (correlation coefficient  $0.58$ ,  $r$ -squared  $33.72\%$ ,  $F$ -ratio  $24.41$ ,  $p = .0001$ ). As can be expected, educational status was also found to be positively associated with the consistency of care (correlation

coefficient 0,57, r-squared 33.57%, F-ratio 24.25,  $p = .0001$ ).

The influence of access to health care on consistency of care was evident when a weak positive relationship between the latter variable and membership of the medical aid scheme was established (correlation coefficient 3.5, r-squared 12.87%, F-ratio 7.10,  $p = .01$ ). A weak positive relationship between income and consistency of care was also found (correlation coefficient 0.4, r-squared 24.82, F-ratio 15.84,  $p = .001$ ).

Another aspect relating to the way in which respondents used health care practitioners, concerned whether they regularly visited a doctor for the specific purpose of having a health check. Twenty-seven (54%) of them did in fact do this. Table 8.48 shows the type and frequency of health checks that respondents underwent. Some respondents had more than one type of check, and in some cases these were carried out by different health care practitioners. Those having an annual general check-up were all men, whilst the 12 women who had a gynaecological check tended to use this visit as an annual general check-up. Except for the two respondents who attended a hypertension clinic at a public health facility, these checks were all conducted by general practitioners or specialists in private practice. The frequency of these checks was in accordance with accepted practice. However, a professional nurse in the workplace could have assisted with some of the epilepsy, diabetes and hypertension checks.

Table 8.48: Frequency tabulations for regular health checks

Type of check	Frequency		Person doing check		Location of person		
	Categ	No.	Categ	No	Categ	Public	Private
General check-up	annual	13	private GP	13	<5km	4	6
					5-9km	0	0
					10-14km	1	0
					15-19km	0	0
					20+km	0	0
Gynae-cological	annual	12	private GP	5	<5km	0	6
					5-9km	0	0
			private gynae	7	10-14km	0	2
					15-19km	0	2
					20+km	1	1
Hyper-tension check	monthly	4	private GP	2	<5km	2	0
					5-9km	0	2
			state doctor	2	10-14km	0	0
					15-19km	0	0
					20+km	0	0
Epilepsy check	monthly	1	private GP	1	<5km	1	0
Tumour FU check	every 18 months	1	neurologist	1	20+km	0	1
TB gland check	annual	1	private GP	1	<5km	0	1
Renal check	annual	1	private specialist	1	<5km	0	1
Diabetes check	monthly	1	private GP	1	<5km	1	0

It is of concern that 45% of the respondents were not regularly monitored by a health care practitioner and this highlights the great need for an occupational health programme in this organisation. In support of this, it was established that 28% of the respondents had not had their blood pressure checked for three or

more years, and 35% of women had not had their breasts examined or a pap smear taken for the same period (Table 8.49). These respondents were all in the lower occupational and educational status groups. They all stated that they did not realise the need for this type of monitoring, and they did not have easy access to a health care practitioner who could perform it for them. Given the economic importance of people during the working phase of their lives, as explained in Chapter One, it is imperative that they receive such assistance in order that health problems are identified and treated timeously.

Table 8.49: Frequency tabulations for regular health checks - blood pressure, pap smear and breast check

Item	No of resps	%
Last blood pressure check		
< 1 year	32	64
1 year - < 2 years	4	8
2 years - < 3 years	0	0
≥ 3 years	14	28
Total	50	100
Last pap smear (women only)		
< 1 year	13	65
1 year - < 2 years	0	0
2 years - < 3 years	0	0
≥ 3 years	7	35
Total	20	100
Last breast check (women only)		
< 1 year	13	65
1 year - < 2 years	0	0
2 years - < 3 years	0	0
≥ 3 years	7	35
Total	20	100

Three other items elicited data pertaining to the use of health care practitioners. The first was intended to check whether respondents had desired to consult a doctor for a health problem experienced within the previous two weeks (referred to in 4.3.2 and Table 8.38). It was established that 9 (45%) of the 20 concerned had wished to do so and all of them actually did see a doctor.

The second item related to ante-natal care. However, as none of the respondents had been pregnant within the two years prior to the time of the survey, no information was obtained regarding their use of health care practitioners for antenatal care.

The last item concerned hospital admissions where respondents would have been seen by health care practitioners. Only four respondents had been admitted to a hospital in the previous twelve months, as discussed in 4.2.4. Two of them had undergone major surgery, one had been seriously injured in a motor vehicle accident, and one had had bronchitis and needed stabilisation for uncontrolled diabetes and asthma. Their length of stay ranged between 10 and 17 days. During this time, two were cared for by a private specialist and the other two by a specialist employed in a provincial hospital.

#### 4.4.6 Health risk profile

Much of the data collected in order to assess the objective health status of respondents is pertinent for establishing their individual health risk profiles. This data is also important on a collective basis for planning an occupational health programme.

Smoking: The smoking pattern of respondents was examined, and it was found that 34% of them were currently smoking (Table 8.50). The mean number of years that they had smoked for was 8.42 and the S.D. was 11.21. This demonstrated that there was a considerable variation in the values, due to the extreme values of a small number of respondents. Chi-squared test for those currently smoking yielded a significance level of 0.0236516. Therefore, it was concluded that the number of respondents smoking at the time of the survey was not due to chance.

Of the 66% who were not smoking at the time of the survey, 12% had previously smoked cigarettes or a pipe. Those who were currently smoking were predominantly male (77%) between the ages of 34 and 45 years. When occupational status was investigated, it was found that the greatest proportion of them (34%) was in the unskilled group of workers. However, there were smokers in all categories. With regard to ethnic group, 29% were Africans, 29% were Indians and 41% were Whites.

Eleven of the respondents smoked over 20 cigarettes per day and ten of them had smoked for more than 20 years. If these results are extrapolated to the rest of the organisation, it could be anticipated that a large number of members would be likely to smoke and to suffer from the ill-effects of smoking. Barick and Slote (1987) cited a study by Polakoff who found, in 1985, that smokers cost their organisations \$335 to \$600 per year in extra expenses, whilst Pender has quoted similar costs (4.4.2.5). Therefore, it is imperative that the university address the issue of smoking amongst its workers, as well as protecting the



Table 8.50: Frequency tabulations for smoking

Item	No of resps	%
Smoking currently		
yes	17	34
no	33	66
Total	50	100
Number of years		
< 5	1	6
5 - 9	3	18
10 - 14	3	18
15 - 19	6	34
20 - 24	2	12
25 - 29	0	0
30 - 34	1	6
35 - 39	1	6
40 and over	0	0
Total	17	100 <sup>1</sup>
Daily consumption		
< 10	6	35
10 - 19	3	18
20 - 29	6	35
30 - 39	1	6
40 and over	1	6
Total	17	100 <sup>1</sup>
Previously smoked		
yes	6	18
no	27	82
Total	33	100 <sup>2</sup>
Number of years when smoked previously		
< 5	3	50
5 - 9	2	33
10 - 14	0	0
15 - 19	0	0
20 - 24	0	0
25 - 29	0	0
30 - 34	0	0
35 - 39	1	17
40 and over	0	0
Total	6	100 <sup>3</sup>
Daily consumption when smoked previously		
< 10	1	17
10 - 19	2	33
20 - 29	2	33
30 - 39	0	0
40 and over	1	17
Total	6	100 <sup>3</sup>

Key:

1 - percentage calculated for a total of 17 respondents

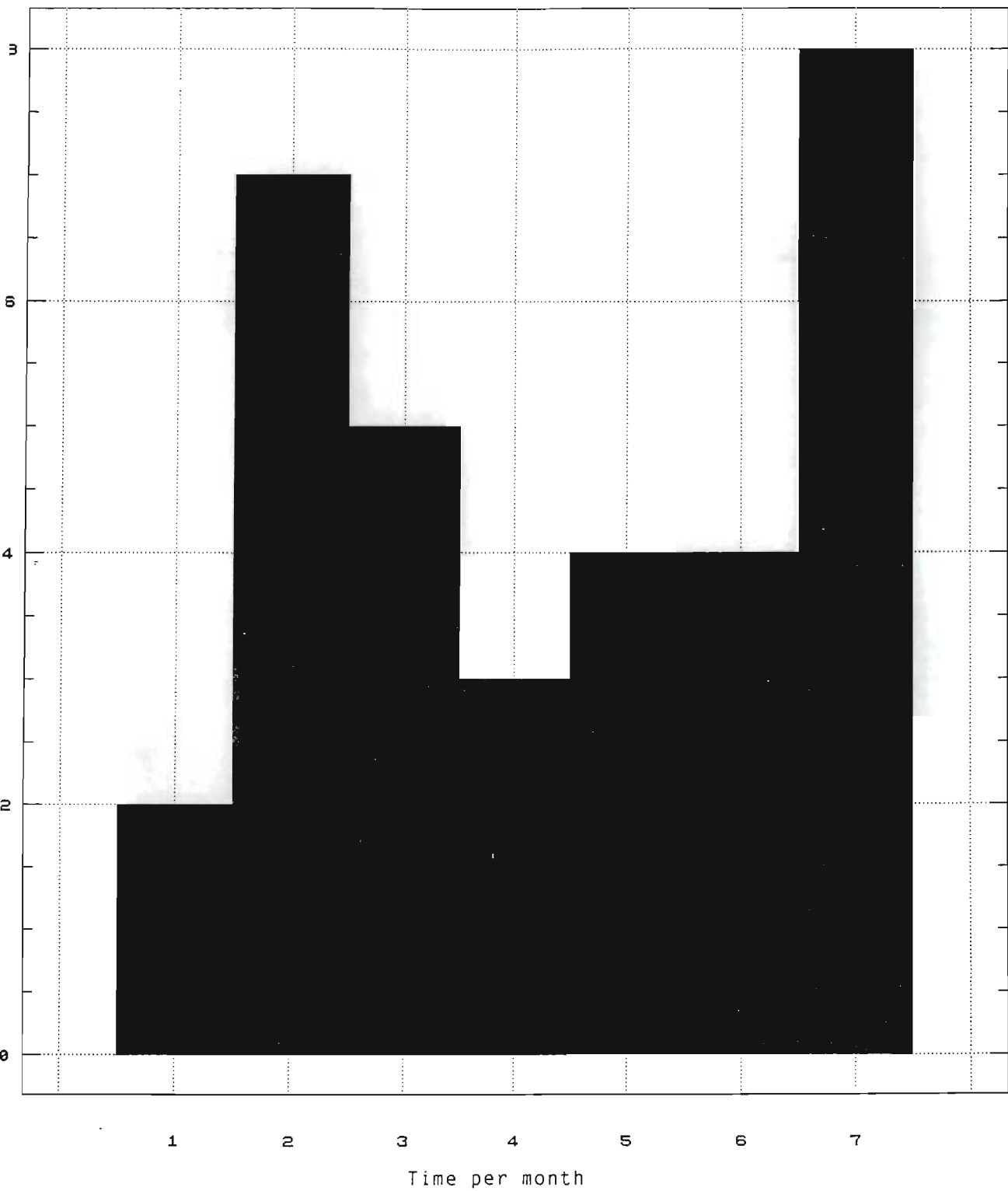
2 - percentage calculated for a total of 33 respondents

3 - percentage calculated for a total of 6 respondents

rights of non-smokers who have to work alongside them. In an effort to identify this, the sickness absence rate due to respiratory tract infections amongst smokers was compared with that for non-smokers in the sample. However, no significant difference was found. Further investigation would be required here.

**Recreation:** Respondents indulged in a wide variety of sport and non-sport recreational activities (Table 8.51), that were determined by cultural and gender preferences, as well as access to resources. The time spent on these was calculated and is reflected in Figures 8.18 and 8.19. Some activities categorised as sports are not usually regarded as such, but were included on the basis that they involved exercise. As can be seen, the time spent on sport varied greatly.

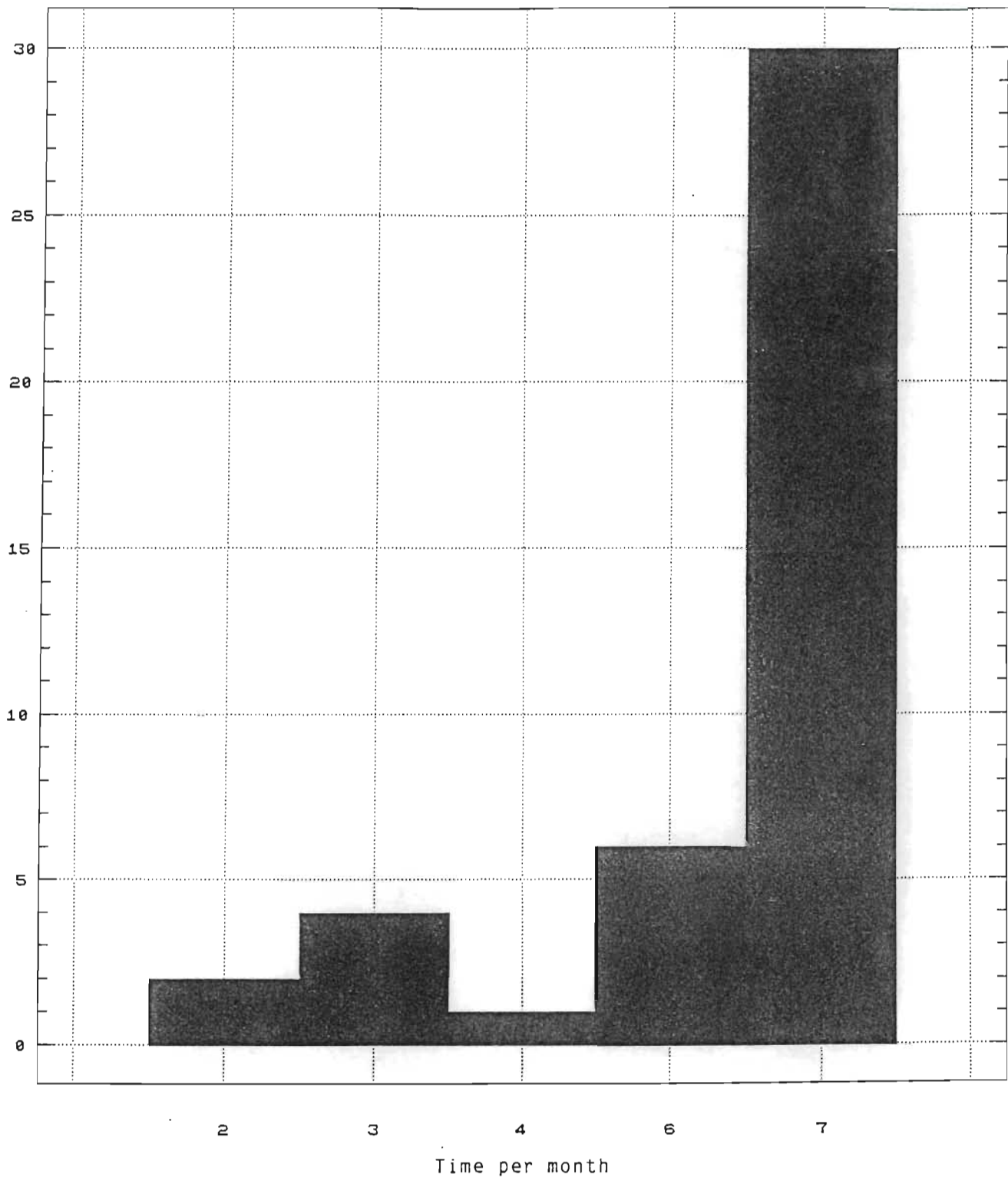
Activities that were included in the non-sport categories were all viewed by the respondents as recreational. Although watching television was a popular past-time, many of the respondents in the lower occupational and income categories did not have access to it and spent a great deal of time listening to the radio. The hostel-dwellers had little access to resources and spent their weekends listening to the radio, socialising, cooking and doing their laundry. Most men enjoyed reading the newspaper. By far the most leisure time was spent on non-sports activities, with 60% spending more than 48 hours a month on them.



Key:

- |                           |                           |
|---------------------------|---------------------------|
| 1. <7 hrs 59 min          | 5. 32 hrs - 39 hrs 59 min |
| 2. 8 hrs - 15 hrs 59 min  | 6. 40 hrs - 47 hrs 59 min |
| 3. 16 hrs - 23 hrs 59 min | 7. 48 hrs or more         |
| 4. 24 hrs - 31 hrs 59 min |                           |

Figure 8.18: Time spent on sports activities



Key:

- |                          |                           |
|--------------------------|---------------------------|
| 1. <7 hrs 59 min         | 4. 24 hrs - 31 hrs 59 min |
| 2. 8 hrs - 15 hrs 59 min | 6. 40 hrs - 47 hrs 59 min |
| 3. 16 hrs - 23hrs 59 min | 7. 48 hrs or more         |

Figure 8.19: Time spent on non-sport activities

Table 8.51: Frequency tabulations for recreational activities

Sports activity	No of resps	Sports activity	No of resps
Walking	11	Motor cycling	1
Jogging	2	Karate	1
Tennis	1	Scuba diving	1
Soccer	3	Canoeing	1
Squash	3	Camping	1
Dog training	1	Cricket	1
Wood work	1	Swimming	3
Gardening	13	Building/home maintenance	3
Callanetics	2	Cleaning the swimming pool	3
Cycling	2		
Yoga	1		
Non-sports activity		Non-sports activity	
Child rearing	9	Car maintenance	2
Socialising	8	Collecting menus	1
Reading	20	Geneology	1
Listening to the radio	9	Holiday trips away	1
Watching television	15	Watching sport (live)	5
Watching videos/films	1	Playing games (cards etc)	2
letter writing	2	Guiding	1
Lay preaching	1	Cake icing	1
Hindu priest	1	Studying	1

Alcohol consumption: The data collected from respondents about the type and quantity of alcoholic drink consumed was analysed to give a weekly consumption rate on the following basis:

One beer (360ml) 13.7g

One glass of wine (150ml) 8.0g

One glass of fortified wine (150ml) 13.3g

One tot of spirits (45ml) 18.0g

(Whitney and Hamilton, 1984; Yerman, 1991)

It was found 28% did not drink alcohol at all (Table 8.52). The majority of those who did (32%) consumed less than 20g weekly. However, there were a number of respondents who drank large amounts, as shown in the frequency polygram in Figure 8.20. Those who drank more than 60g weekly were investigated further with regard to gender, ethnic group, occupational status, weight for height, workload, work satisfaction and decision-making in their work. It was found that they were predominantly White males, between 35 and 44 years of age, 50% experienced quantitative overload regularly and 36% sometimes, and 79% experienced high or moderate satisfaction in their work.

Exercise: A large number of respondents were in sedentary jobs (34%) or experienced minimal occupational exertion (14%), as shown in Table 8.52. Many of these respondents realised that they needed more exercise and of those expressing interest in learning more about an exercise and fitness programme, 45% worked in a sedentary job and 23% only experienced mild exertion in doing their work. Further analysis did not demonstrate that respondents who obtained little exercise in their work necessarily had more non-occupational exercise. When respondents who obtained minimal exercise were asked how they could improve their health, all stated that they realised that they needed to get more exercise. However, as has been mentioned in a number of places, one of the most common reasons given for not exercising more was lack of time.

The respondents who obtained moderate to intensive occupational exercise had manual jobs and so belonged to the lower occupational categories.



Table 8.52: Frequency tabulation for alcohol consumption, exercise, sleep and caffeine intake

Variable	No of resps	%
Consumption of alcohol (weekly)		
0	14	28
< 20g	16	32
20 - 39g	2	4
40 - 59g	4	8
60 - 79g	3	6
80 - 99g	4	8
100 - 119g	2	4
120 - 139g	0	0
140 - 159g	1	2
160g and over	4	8
Total	50	100
Exercise - occupational		
sedentary occupation	18	36
minimal occupational exertion	7	14
moderate occupational exertion, no sweating	18	36
moderate occupational exertion, to the point of sweating	4	8
intensive occupational exertion with sweating for at least 30 minutes	3	6
Total	50	100
Exercise - non-occupational		
no non-occupational exertion	3	6
minimal non-occupational exertion	19	38
moderate non-occupational exertion, no sweating	14	28
moderate non-occupational exertion, to the point of sweating	6	12
intensive non-occupational exertion with sweating for at least 30 minutes	8	16
Total	50	100
Sleep (hours per night)		
< 4 hrs	0	0
4 - 4.99 hrs	0	0
5 - 5.99 hrs	9	18
6 - 6.99 hrs	9	18
7 - 7.99 hrs	32	64
8 hrs and over	0	0
Total	50	100
Caffeine intake (daily)		
< 100mg	12	24
100 - 199mg	13	26
200 - 299mg	11	22
300 - 399mg	7	14
400 - 499mg	5	10
500 - 599mg	0	0
600 - 699mg	1	2
700 - 799mg	0	0
800mg and over	1	0
Total	50	100

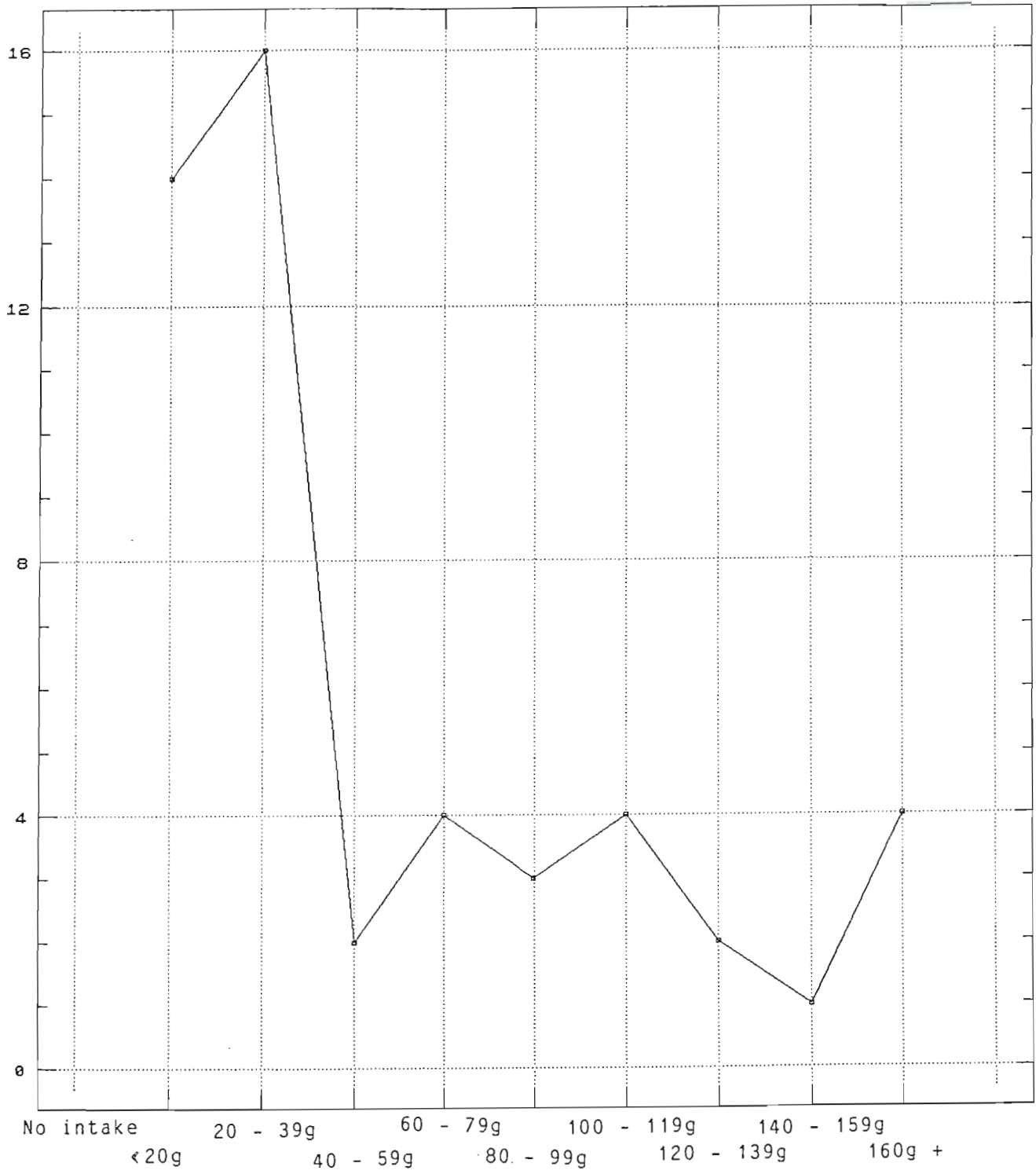


Figure 8.20: Frequency polygon of weekly alcohol consumption

When respondents were asked about their non-occupational exercise it became clear that many of them exercised quite strenuously, although not for recreational purposes. For example, respondents who used public transport often had to walk a long distance to the pick-up point. Respondents who had moderate to intensive exercise obtained this from sports such as gardening, running, cycling and squash.

**Sleep:** Most respondents obtained adequate sleep, usually getting between 7 and 8 hours a night (Table 8.52). Those who had less found that they did not require more. However, 10 respondents complained of periods of lack of sleep or insomnia due to work pressure (see 4.3.2).

**Caffeine intake:** This was calculated according to figures from Hill and Smith (1985), Whitney and Hamilton (1984), and Yerman (1991) as follows:

One cup of tea (180ml) 50mg  
One cup of instant coffee (180ml) 60mg  
One cup of cocoa (180ml) 13mg  
One can of cola beverage (360ml) 65mg

It is acknowledged that the caffeine content of tea varies markedly in relation to the period of time over which it is brewed, however a midpoint was used for ease of calculation. The consumption amongst respondents is shown in Table 8.52 and Figure 8.21. The respondents who did not drink these beverages were mostly Africans in the lower occupational status categories. They usually drank water, mahewu and milk.

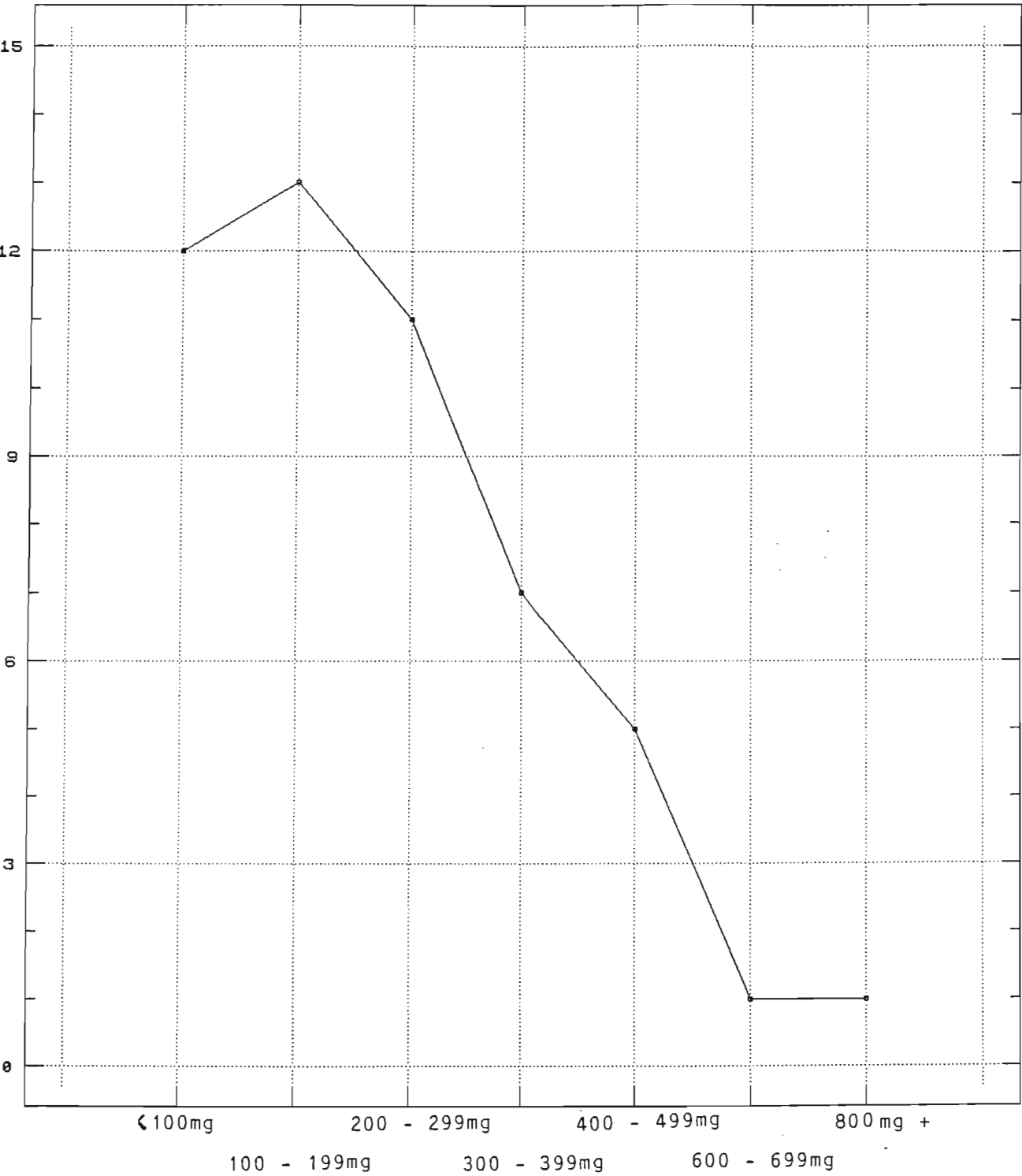


Figure 8.21: Frequency polygon showing caffeine consumption

Those who ingested large amounts of caffeine (over 300mg daily) were examined in relation to gender, ethnic group, age, weight for height, occupational status, alcohol consumption, workload, work satisfaction and decision-making at work. It appeared that they were predominantly White males, between 35 to 49 years of age, in the upper occupational status categories. Thirty-six percent of them were overweight, 64% experienced quantitative overload, all experienced work satisfaction and 93% felt that they were involved in decision-making regarding their work.

It should be noted that partly skilled and unskilled respondents had less opportunity to consume large amounts of caffeine containing beverages owing to the fact that they did not have access to facilities for making these drinks throughout their working hours, as did many of the other respondents.

Health effects of working hours: Throughout the assessment it has been clear that many respondents perceived that their lifestyle placed them at risk of developing health problems and yet they did not feel that they had the time to correct it, in view of their workload. Figure 8.8 demonstrates that many respondents spent between 50 and 65 hours per week travelling to work and actually working for the university. Although these amount to long working days in the week, respondents should still have had time for relaxation. However, it does not take account of the extra time worked during peaks periods that many respondents actually experienced. It is likely that the negative health effects that some respondents reported, were associated with these periods. These could have included fatigue, headaches and lack of sleep.

Stress in the organisation: In the early stages of planning the survey, many of the employees and their representative organisations stated that members of the organisation were feeling very stressed. The instrument was designed to identify the presence of well accepted signs and symptoms of stress, together with patterns of behaviour that may occur in response to the perception of stress. These behaviours on their own are not necessarily a sign of stress. A rating scale was then developed to establish stress levels amongst respondents. A score was assigned according to the combined presence of at least two signs or symptoms and two negative compensatory behaviours (Table 8.53). Therefore, a person who was feeling tired or another who smoked would not be assessed as feeling stressed. When a sign or symptom was present, other possible causes had to be precluded as far as could be determined. For example, a respondent who had night sweats, loss of weight and fatigue could well be suffering from tuberculosis.

When the data from respondents was analysed, 31 (62%) of them were rated as not being stressed, 10 (20%) as being mildly stressed and 9 (18%) as moderately stressed. Therefore, a significant number of respondents were rated as showing signs of being stressed, and this would be an important feature of the aggregate health profile. Many of them rated thus, remarked that they smoked and drank alcohol or coffee to keep going in the face of quantitative overload.

A number of crosstabulations were then performed to identify associations between other variables and the level of stress in respondents (Table 8.54).



Table 8.53: Rating scale for stress levels

Signs and symptomsPersonal health risks:

- 2 Loss of weight
- 3 Fatigue
- 4 Insomnia
- 5 Headaches
- 6 Night sweats (TB signs and symptoms excluded)
- 9 Bleeding - haematemesis or malaena indicating duodenal ulcers
- 12 Dysphagia
- 13 Indigestion
- 14 Hoarseness of voice
- 15 Cough due to bronchospasm
- 19 Diarrhoea
- 21 Hopelessness/helplessness
- 22 Depression

- ◆ Tachycardia
- ◆ Hyperventilation
- ◆ Hypertension

Health effects of quantitative overload and quantitative overload and qualitative underload:

- \* anxiety
- \* tension/neck stiffness/backache
- \* fatigue
- \* insomnia
- \* irritability
- \* eating disturbances (anorexia or overeating)
- \* weight change (increase or decrease)
- \* dysphagia
- \* headaches
- \* epigastric pain/ulcers
- \* asthma aggravated
- \* upper respiratory tract infections
- \* palpitations
- \* feeling stressed
- \* increased alcohol consumption
- \* no time for leisure/exercise
- \* frustration
- \* restlessness at the end of day after work/difficulty in relaxing
- \* need to be left alone after a days work

Lifestyle factors - negative compensatory factors.

- # Amount of alcohol consumed
- # Amount of cigarettes smoked
- # Amount of caffeine consumed
- # Amount of sleep
- # Lack of recreation (would like to, but has no time)
- # Lack of exercise (would like to, but has no time)

Scoring to indicate stress level

No of signs and symptoms	Lifestyle factors		Total score	Stress level
0	+	1	1	no distress
2	+	2	4	mild distress
4	+	3	7	moderate distress
6	+	4	10	severe distress

Table 8.54: Crosstabulation of stress level by gender, ethnic group, educational and occupational status and job insecurity

Variable	Not stressed	Mildly stressed	Moderately stressed
Gender			
male	67	20	13
female	55	20	20
Ethnic group			
African	81	13	6
Indian	63	37	0
White	50	19	31
Educational status			
< Std 1	100	0	0
Std 1	0	0	0
Std 2	0	0	0
Std 3	100	0	0
Std 4	100	0	0
Std 5	0	0	0
Std 6	83	17	0
Std 7	0	0	0
Std 8	33	67	0
Std 9	100	0	0
Std 10	60	20	20
dip/cert	42	42	16
degree	50	7	43
Occupational status			
professional	50	8	42
intermediate	57	29	14
skilled non-manual	50	36	14
skilled manual	0	0	100
partly skilled	71	29	0
unskilled	100	0	0
Job insecurity			
not usually	65	19	16
sometimes	75	0	25
yes, often	29	57	14

Note: Frequencies expressed as percentages

Equal numbers of men and women were rated as mildly stressed (20%), however 25% of women were found to be moderately stressed as opposed to 13% of men. This could have been due to the pressures on working women who perform dual roles. Another possibility is

that women are more ready to verbalise signs and symptoms than men, which accords with other studies cited in the literature review (3.4.2.1). The issue should be investigated further.

When ethnic group was considered, proportionately more Whites and Indians had higher stress levels than Africans. An analysis of the occupational status of respondents in relation to stress level showed that those in the upper categories had the highest levels of stress. For example, 8% of the respondents in the professional status category were mildly stressed and 42% were moderately stressed. Amongst those in the skilled worker category, 36% were mildly stressed and 14% were moderately stressed. In contrast, only 27% of the partly skilled workers were rated as mildly stressed and none of the unskilled workers were rated as stressed (Table 8.54). These results were supported when regression analyses showed a weak positive association between ethnic group and stress level (correlation coefficient 0.32, r-squared 10.72%, F-ratio 5.76,  $p = 0.02$ ), and a weak negative relationship between occupational status and stress level (correlation coefficient -0.37, r-squared 13.8%, F-ratio 7.73,  $p = .007$ ).

A similar pattern emerged for educational status, with levels of stress rising as their educational status increased. It has already been established that Whites occupy the higher educational and occupational status categories in the organisation. They have more responsibility in their jobs and are possibly more accountable for completing work on schedule. This could be the reason that stress levels were higher in these groups. Although it is recognised that people of colour tend to be limited in their access to resources

due to political factors and that this can be perceived as extremely stressful, it is possible that the members of this organisation were comparatively more privileged in their working and living conditions than other people in their communities. This may account for the fact that stress levels in this group are lower than would have been anticipated. However, these are merely tentative suggestions.

No clear link could be established between levels of stress and work satisfaction, except that 71% of those who experienced high and moderate work satisfaction were either mildly or moderately stressed. It is postulated that work satisfaction did not prevent stress. In fact, none of those who experienced little work satisfaction were stressed. Similarly, no clear trends emerged when stress and decision-making were crosstabulated. It is possible that these would be apparent in a larger sample.

Respondents who worried often that they would lose their jobs also appeared to have higher levels of stress. Only 29% of them were rated as not being stressed compared with 65% of those who said they did not worry. However, it cannot necessarily be concluded that this worry caused the perception of stress. For example, it is possible that respondents whose work performance was poor as a result of other problems that they perceived as stressful, could have also been concerned that they would lose their job.

Numerous respondents (48%) stated that they would like to learn about stress management. When this was crosstabulated with stress levels, it was found that those wishing to learn about stress management comprised 35% of the respondents who were not

distressed, 80% of those who were mildly stressed, and 56% of those who were moderately stressed.

There did not appear to be any association between stress level and the way in which the respondent defined health.

The conclusions to be drawn from the data on the health risk profile will be discussed at the end of this section on health variables.

#### 4.5 Organisation of health care

##### 4.5.1 Structure

Data on the manner in which health care is provided and financed, as well as its efficiency, will be gathered in Section Five of the strategy. However, information pertaining to its structure in terms of the utilisation and experience of the system is implicitly contained in some of the items of the health variables. Principally, these include the use of health care practitioners (4.4.5), acceptability (4.5.5) and accessibility (4.5.6), and the description of the community in which the workplace is situated (end of residential variables).

##### 4.5.2 Range of services

Some allusions to the range of services of the workplace clinic have been made in the foregoing discussion of variables. However, most of the data would come from Section Five of the strategy.

##### 4.5.3 Personnel

Data on the personnel will be gathered from Section Five of the strategy.

#### 4.5.4 Availability of basic resources

Section Five of the strategy will yield this information.

#### 4.5.5 Acceptability

Respondents were asked whether they were usually satisfied with the outcome of using the particular doctor they consulted. The results are shown in Table 8.47. Those using the workplace doctor were all satisfied, except for one who said that he did not really have confidence in the doctor. Seven of the respondents who consulted the doctors in a public health service were satisfied, compared with three who were not satisfied. In the latter case, two felt that the doctors had not assisted in the alleviation of the health problem that they had sought help for and one said that having to see a different doctor each time they used the service made it impossible to establish a relationship with a doctor.

Of the respondents who consulted a private general practitioner, 34 were usually satisfied and three were sometimes satisfied with the outcome. However, complained that the outcome was unsatisfactory. Their reasons were that they did not have confidence in or like the doctor, they found the doctor ineffective, or the doctor was too expensive. The reasons given by a further three were related to the fact that they perceived that the doctor was too prescriptive. For example, one respondent had asthma that he controlled well. Through experience, he had learnt how he felt when he had a lower respiratory tract infection that required an antibiotic. However, there were occasions when the doctor ignored his opinion. The respondent then had to go back for a further visit when his condition deteriorated, in order to get the antibiotic.



This was a good example of the disparity between subjective health status and objective health status. Another respondent stated that although she had confidence in her doctor, there had been a few occasions when she felt that he should have referred her to a specialist but he was always most reluctant to do so. The last respondent had poorly controlled asthma and diabetes and complained that his doctor tried to put him off work excessively, and did not understand that this could jeopardise his job.

The discussion in 4.4.5 on the reason for the respondent consulting a particular doctor also pertains to the acceptability of health care as do the comments in 3.6.4 regarding the health care given at the worksite clinic and the need for additional services.

#### 4.5.6 Accessibility

In order to establish the distance that respondents had to travel to obtain health care, they were asked to indicate the locality of the health care practitioner whom they consulted for a general health problem or to have a health check. Their responses were then rated according to the distance from the respondent's home (Tables 8.47 and 8.48).

All but one of the respondents who consulted a private general practitioner for health checks lived within 5km of the doctor, which meant that this care was easily accessible in terms of distance to travel. Most of those respondents who had to travel more than 5kms to see a private general practitioner, were consulting a doctor who lived near to where they worked. In three cases, the respondents had such confidence in their doctors that they were prepared to travel long distances to consult them. Private

practices in which general practitioners operate, are in essence small businesses. Their location is usually determined by demand in a geographical area, so these practices tend to be widely distributed and more accessible in terms of distance to travel than most health services.

In order to consult a doctor in a public health facility, many respondents had to travel longer distances from home. These same respondents relied on public transport. However, some of them were able to use a facility that was close to their workplace, as described in 4.4.5. Problems of accessibility arose when a respondent felt too ill to travel into town from home, to such a facility.

The cost of consulting a health care practitioner was also examined to assess the accessibility of their services. As has been discussed in 3.6.1, the respondents in the upper income groups of the organisation belonged to the in-house medical aid scheme or were members of their spouses' schemes. Therefore, they were more able to afford to use private health care services, than members who did not have such a benefit and it could be concluded that health care was accessible to them. They were asked to indicate the usual cost of a consultation, without treatment. The rates ranged between R20.00 and R35.00, with 27.50 being the mode. However, they were only personally responsible for the payment of the portion that exceeded medical aid rates which were R27.00 at the time of the survey. All of the respondents who had been admitted to hospital during the preceding year, had not personally had to bear any of the costs.

A great problem encountered by medical aid schemes is the over-use of benefits. The feeling is that members are not aware of the cost of their health care and that they therefore seek care unnecessarily often. In this organisation, it was interesting to note that only 17 (35%) of the 48 respondents using private practitioners were able to accurately indicate the cost of a visit. The researcher felt that in order to reduce abuse, many of them required education on how a medical aid scheme operated and the manner in which rates of benefits were determined by usage.

The respondents without medical aid, who occasionally resorted to the use of a private general practitioner, were usually required to pay approximately R25.00 for the visit and basic treatment. This was a large amount of money for people of their income bracket. In contrast, when they visited a public health facility they could pay between R5.00 and R8.00, for the consultation and full treatment, regardless of its nature. The care was therefore considerably less expensive than private sector care.

Another factor to be examined in evaluating the accessibility of health care, was the length of time that respondents had to wait between arriving at the place where the doctor worked and actually being seen by the doctor. The majority of respondents consulting a private general practitioner (85%) waited less than 30 minutes. In contrast, respondents using a public facility had to wait between 3 hours 30 minutes and 3 hours 59 minutes. This was a major disadvantage of using these services. It not only affected the acceptability of the care but also the accessibility, in that respondents could not afford to spend that

amount of time away from work.

When respondents were asked what additional resources they required to improve their health status, one stated that he needed access to better quality care. He had experienced leg weakness and backache, and had consulted a number of doctors over the past years. He was a 50-year old labourer, who did not understand the nature of back injuries or have the means to earn an income other than by performing manual work. He had been admitted to a country hospital for an extended period of bedrest 4 years earlier, but stated that none of the health care workers had explained what was wrong with him or why he was being kept in hospital. The subjective health status of the respondent had most certainly not been taken into account in his encounters with health care practitioners, nor had he been involved in his care. It is therefore not surprising that he felt that his health status would not improve unless he could have access to better quality care. The problem for him was that he did not know where to find this or whether he could afford it.

In general, the respondents who used the university clinic did so because it provided health care that was close, quick and free. However, the extent of care provided was limited.

## **8.2 Occupational health diagnosis**

In terms of the strategy, a diagnostic statement of the aggregate health status of the organisation would be produced from an analysis of the data. This would then be used to plan the occupational health

programme. The document would also be presented to management and other key groups of workers involved in the study. Although the field test has involved only one part of the strategy, such a statement will be provided as an example. It must be emphasised that the detailed findings would still be used by the occupational nurse as a data-base, against which to evaluate changes in the organisation and plan health care.

It is important to note that the members of upper management were largely excluded from this survey for reasons discussed in Chapter Seven, and that this would not usually be the case when the instrument was used by an occupational nurse in an organisation. Therefore, their needs may not be sufficiently addressed.

The assessment was conducted in a time of rapid political and social change and an economic recession in the country. This has had a marked effect on the organisation, which has also been undergoing rapid change.

#### 8.2.1. Demographic profile of the organisation

The composition of members is not reflective of the ethnic and gender pattern of the population, although early signs of efforts to make it so, are evident. White males predominate in the organisation at present. The historical reasons for this lie with governmental apartheid policies and inequities in educational opportunities, and the traditional role of women. Accordingly, the African members have had the least formal education, whilst the Whites have had the

most. The majority of members of the organisation are between 35 and 54 years of age, and the greatest proportion (64%) of them are currently married.

#### 8.2.2 Family and community influences on health in the organisation

Although 38% of respondents live within 30 minutes travelling time from work, a large number spend much more time on travel. Only 16% reside in suburbs surrounding the university, and the remainder are scattered over a widely dispersed area. The areas in which they live are related to income and ethnic group, the latter again due to past governmental separatist policies. The transport costs for lower income members consume a far greater proportion of their budget, thus reducing money available for other essential living costs. They largely rely on public transport, which currently carries greater safety risks. Furthermore, the inconvenience associated with using this transport and worries about missing it, can act as stressors. Although there is little that the organisation can do about this under existing financial constraints, it is important that other members of the organisation are aware of these problems and are supportive where possible. Such concern is evident, in that work shifts dovetail with transport timetables.

A good proportion of the respondents own their homes, as a result of the organisation's housing subsidy scheme, although this could be broadened to include all categories of staff. Home ownership is generally recognised as a health supporting factor.



The supply of basic services to respondents' homes is good, with the exception of migrant workers' homes, which have inadequate sanitation, refuse disposal and energy supply. This places them at an increased risk of developing communicable diseases, that can then be passed on to fellow workers, unless knowledge and hygiene levels are raised. The migrant workers who live in hostels or rent accommodation, have very limited facilities for cooking and storing food, laundering clothes and recreation. They are all men, and have a poor understanding of the need for a balanced diet, with the result that their dietary intake is frequently unbalanced and inadequate, and they are underweight. It is recommended that the possibility of providing such workers with low cost, traditional diets from the residence kitchens be investigated.

A large number of African respondents have five or more financial dependents (62%) and three or more children (69%), which adds to their economic burden. Whites have an average of two children. There is also an inverse relationship between educational status and number of children. However, the number of children for members of the organisation is not high compared with figures for the general population. Therefore, family planning assistance should be a facet of the programme, but not targeted at any particular group.

#### 8.2.3 Work influences on organisational health

This is a service organisation, with its main purpose being tertiary education. Therefore, the members can be broadly divided into management, teaching and support staff. There is a strong positive

correlation between educational status and occupational status, and a marked divide between academic and non-academic staff.

White males predominate in the senior ranks of the organisation. Members of the lower categories report frustration at the lack of opportunities for advancement and express a desire for staff development. The organisation has initiated an equal opportunity, affirmative action policy to address the demographic disparities, which is in keeping with changes in the broader community.

In the lower occupational ranks, the income levels are for the most part adequate to sustain a household of people at the subsistence level. However, they are insufficient to permit expenditure on anything but the basic requirements. In the upper ranks they tend to be good.

This is a particularly stable workforce, with 66% of the members having been employed by the organisation for ten or more years. It has traditionally been regarded as a good employer, with pleasant working conditions and reasonable remuneration packages. In addition, the prevailing economic climate has discouraged movement between jobs, thereby contributing to the stability. The organisation has committed itself to avoiding retrenchment as far as possible, preferring to freeze posts as they become vacant, finding other work in the organisation if positions are made redundant, and restricting salary increases. Consequently, anxieties about job loss, a potent stressor, are not especially marked. However, such measures are also having negative effects as the workload does not seem to have been reduced, and staff

perceive that they are working harder, for less money (due to inflation) and insufficient recognition.

Quantitative overload is a significant and marked problem for the majority of the organisation's members. Although this is not confined to any particular occupational category, the degree of overload appears to rise with occupational status and be especially marked for academic staff, when measured in terms of hours worked. This poses a risk for their health. It is likely that had more members of management been included in the survey, a similar pattern would have emerged amongst them. However, it must be remembered that staff who are reliant on public transport are unable to work longer hours and this could have distorted the picture for them. Many reported having to work harder and experiencing peak periods, yet their hours of work did not rise.

A number of respondents perform additional work besides that for the university, to augment their earnings. In some cases this is related to their responsibility to their profession. There is no association between workload for the university and taking on additional work. Individuals who are already working long hours at work should therefore be discouraged from this practice, in view of the associated health risks.

With regard to organisational culture, the university is characterised by a high degree of specialisation, with great emphasis on control in terms of well-defined authority, rules and procedures to co-ordinate and standardise activities, which is probably necessary in view of the number of members. However, there are concerted moves to devolve power, so that

decision-making is carried out by a committee system, whose membership consists of departmental and section heads, or at department level where possible, in addition to increasing autonomy. Therefore, there are definite efforts towards democratic as opposed to autocratic management style.

In spite of this, a matter of concern is that 30% of the respondents feel that they are only occasionally or not consulted at all over decisions regarding their work. These perceptions are higher amongst Africans and Indians, and amongst the lower occupational categories. It indicates a need for improved communication and the meaningful involvement of all members in decision-making where practical.

Although integration in the organisation requires further investigation, it is apparent that respondents perceive that departments do not always co-operate towards the achievement of the organisation's goals. The division between academic and non-academic staff also interferes with social cohesion in the organisation, and efforts to improve understanding between them are important. Many of the non-academic respondents feel that the organisation regards them as less valuable than the academic staff.

One third of the respondents stated that they are given inadequate information to carry out their work. Again, this indicates a need to improve communication in the organisation.

The majority of respondents reported having sufficient authority and responsibility to perform their work, and experienced high or moderate job satisfaction, which are important health supports. The

reasons given by the 9% who were dissatisfied, centred around excessive workload, low occupational status and lack of mental stimulation.

Whilst many members feel that their efforts at work are valued, it is disconcerting to note how they deduce this. Very few receive explicit, positive feedback on their performance yet desire this. One tenth of them said that they did not know how their superior felt about their performance, as he or she is too busy, seems disinterested or has little contact with them. Those who perceive that their work is not valued (12%) feel this way because they experience only criticism or interference instead of support from their superior, are given more work with little account being taken of their current workload, or else have a poor relationship with the superior. All these points indicate a serious lack of management skills, and in this regard, the social environment of the organisation is not a health strengthening influence.

The job rating system and the promotion system are sources of dissatisfaction for many respondents, chiefly because they are poorly understood or felt to be unfair or unsuitable for the nature of the work.

There is a need for staff development at all levels, on aspects such as adult basic education for unskilled workers, communication skills for all members, and management skills. The resources are available in the organisation, it is more a matter of commitment to such a programme and organisation.

Of great concern is the inadequate occupational safety programme. There is a wide variety of hazards in the organisation, and yet these do not appear to



have been consistently identified so that control measures can be implemented. Only 40% of respondents are aware of a safety programme, and of those who are aware of one, over half feel it is ineffective. There is an urgent need to train members in first aid, especially cardio-pulmonary resuscitation skills, fire fighting, and basic safety measures. The use of protective clothing and equipment should be improved, as must the system for reporting and investigating injuries at work. In view of the new Occupational Health and Safety Act, No. 85 of 1993 that becomes effective in 1994, management must demonstrate a serious commitment to safety in the workplace, and work towards upgrading the programme. It is clear that the employee representative organisations could also have a greater role to play in this area.

The in-house medical aid scheme is generally regarded as adequate, although 22% of respondents feel that the premiums are too high. Vacation and sick leave allowances are good, but many more senior members find it difficult to take vacation leave as there is inadequate leave replacement provision.

The health service provided for students is used by 22% of respondents, mainly for minor problems because it is convenient, free and time-saving. However, many respondents believe that the services should be broadened to protect and promote staff health. An extended service in terms of hours of operation, geographical distribution owing to the wide area of the campus, regular screening and monitoring of health hazards, and a health promotion programme are desired.

The support for respondents could be improved,



especially regarding work-related problems. Of the 64% of respondents reporting having experienced work-related problems that caused them great worry, only half found their departmental or section head supportive. The pattern is similar for personal problems. Work colleagues provide the most support, which is usual and is a health support.

#### 8.2.4 Influences relating to individual health status and the use of health care system

With very few exceptions, respondents define health in terms of the absence of disease or role performance. The greatest number using the former are in the lower educational status categories.

Two thirds of them feel that their health status could be improved through lifestyle changes, control of work-related problems and better access to health care, however only 24% of the sample perceive that they could accomplish this with the resources at their disposal. It is evident that a significant number of them have an external locus of control, particularly those with a lower level of formal educational, who are mostly Africans. This group is exposed to greater health risks, and yet the likelihood of their believing that they can take corrective action is reduced. Half of them perceive that they are at risk of developing a health problem, and yet over a third are unable to identify appropriate preventive action. All of these factors indicate the need for health status monitoring and effective health education. In this regard, 80% of respondents expressed a desire for a health promotion programme.

Sickness absence should be monitored in the

organisation, to establish the predominant health problems on an ongoing basis, so that preventive action can be planned.

A significant number of the respondents have adopted unhealthy patterns of behaviour that place them at risk of developing chronic health problems. Over one third smoke, many of them heavily; the majority of them obtain insufficient exercise both on- and off-the-job; and alcohol and caffeine intake is high. There was evidence that many of them are stressed and that these unhealthy behaviours are being used as coping mechanisms, although there is also a lack of knowledge about the association between lifestyle and health status. The effects of these behaviours are apparent. More than one third of them are overweight and close on a quarter have raised blood pressures.

Periodic health checks for basic aspects such as blood pressure, breast examinations and pap smears have not been conducted on 45% of respondents for a number of years, yet they are in the high risk group for developing associated health problems. In addition, a large number of them have longstanding health problems that are not well controlled, and can be exacerbated by work influences.

A significant proportion of the respondents who feel overloaded in terms of quantity of work, experience a range of negative health effects as a result. Those who do not, are using effective stress reduction techniques. Although work satisfaction seems to be counteracting this to some extent, workers who consistently experience overload are likely to derive less work satisfaction eventually, and their productivity will drop. It is important that this is

recognised, and action taken. Improved management skills to remove sources of frustration emanating from poor management, especially at middle management level, is needed. Members require assistance with prioritising work and managers should adjust their demands accordingly or the work environment will adversely affect member's health.

The health effects of work and the health status of members should be monitored. It is evident that many of the respondents do not receive consistent care, whether they use public or private health services. Those who rely on public health services experience difficulties related to accessibility, acceptability and appropriateness.

#### 8.2.5 Summary statement of health needs

Stress is a significant problem in the organisation, due to many well recognised work-related sources, as well as community influences at a time of rapid change. Many of the former can be removed or ameliorated by strengthening management skills at upper and middle management level, with particular regard to communication, recognition of work contribution, decision-making, job rating, the promotion system, support with problems, and staff development. An effective affirmative action policy is indicated, with the provision of adequate training. Concerted efforts to promote social cohesion in the organisation will decrease the stressors in the work environment.

The safety programme requires upgrading to increase its effectiveness.

A comprehensive worksite health promotion

programme that addresses all the needs identified in this report and involves both management and workers is clearly required in this organisation.

### **8.3 Use of the field test results to evaluate the reliability and validity of the instrument**

For the most part, the field test results were found to be representative of the population (as indicated throughout 8.1), and are therefore regarded as valid for evaluating the instrument.

The types of validity and reliability of the instrument that were to be examined on the basis of the field test, were outlined in Chapter Seven (7.2.3). However, it must be emphasised that this is just the first phase of testing the instrument.

#### **8.3.1 Validity of the instrument**

The situation for which the instrument has been developed has been discussed throughout the course of the study. Further specific instructions for its use, that will contribute to the validity of data collected, will be indicated in Chapter Nine (9.3).

With regard to criterion validity, it has been possible to demonstrate concurrent validity for some of the measures. These include socio-economic status, decision-making as a determinant of work satisfaction, and educational level as a determinant of occupational status. In all these cases, it would be possible to predict an individual's position for the one variable from the other one. Other instances are mentioned in the discussion in 8.1.

It will only be possible to establish predictive validity when the instrument is administered in an organisation, and subsequent aspects are then re-examined. For example, predictions from the health risk profile for individuals could be checked over time, provided that corrective action had not been taken by the individual in the interim.

Criterion validity can also be assessed in the future, when the full assessment strategy is conducted in an organisation, to check the agreement between indicators of sickness absence, IODs, safety inspection reports and so forth against survey findings.

### 8.3.2 Reliability of the instrument

As explained in 7.2.3, establishing the reliability of the instrument is problematic, and will have to be examined in more detail in the future.

However, a number of items in the instrument were included as cross checks for the accuracy of the data. The field test results for these items showed that there was consistency in individual's responses. In the event of inconsistencies being identified when the instrument is used, the interviewer could investigate further during the interview to ensure accuracy. The items concerned are:

#### Sleep:

"Have you experienced any of the following lately?

4. Persistent lack of sleep (duration, average number of hours of sleep and number of times of waking each night in

the past month)"

"Please state the usual number of hours sleep obtained each night:"

Sickness absence:

"How many days of work have you missed due to illness this year?"

"how many days you were unable to work:"  
(in relation to a health problem in the last two weeks)"

"the approximate length of hospital stay"

Age:

"AGE"

"Please give details of your previous work positions/ period in this position"

Number of children:

"How many children do you have?"

"GRAVIDA/PARA"

Work-related health problems:

"Please give details of your previous work positions"

"Please briefly describe the nature of your work"

"Please list the health and safety hazards associated with your work and workplace:"

"Do you think your previous job might have contributed to the development of this problem?"

"Do you think that your present job might have contributed to the development of this problem?"

In conducting the field test, great care was taken to prevent the occurrence of random errors during the data collection phase.



#### 8.4 Conclusion

A detailed analysis of the field test results according to the model of aggregate health, has been conducted in this chapter. From this, an occupational health diagnosis was produced, to demonstrate how health needs can be identified from the survey findings.

It was established that for the most part, the findings could be generalised to the population and it is therefore concluded that the sampling strategy outlined in Chapter Seven and followed for the survey was effective.

Aspects of the validity and reliability of the instrument have also been examined in this chapter.

## **CHAPTER NINE: CONCLUSION AND RECOMMENDATIONS**

The purpose of this chapter is to evaluate and refine the model, strategy and instrument according to the field test, and then make recommendations for their use. It was explained in Chapter Seven, that the field test of the instrument was suitable for this purpose as it incorporates an analysis of all the variables in the model and the strategy.

This chapter also marks the end of the study, which has been long and complicated due to the multi-dimensional nature of health in the workplace and the need for meticulous attention to detail demanded by methodological research. The model and strategy will require further testing after this, on a wider scale and in other types of organisations.

### **9.1 Evaluation and refinement of the model of occupational health**

The process of using the instrument in an organisation provided an opportunity to identify and observe the inter-relationships between events and

conditions in the real situation, that together affect the health status of individuals. This experience demonstrated that the manner in which these influences are categorised in the model and the 'wheel' of variables is logical and comprehensive, and that it provides a meaningful framework for analysing health status. All the influences encountered could be accommodated in the model, which will therefore remain the same. The only alteration to the 'wheel' of variables will be the addition of religious beliefs and department, which will bring the total number of variables to 76 (see Figure 9.1).

Beliefs about the meaning and causation of health and illness are frequently influenced by religious beliefs, which in turn form part of the cultural perspective of individuals and wider communities. These beliefs can have a profound effect on health behaviour, for example hygiene practices, diet and treatment. Therefore, they must be considered when determining health status and needs, and when planning actions to improve or protect health so that recommendations are perceived as appropriate. In terms of the conceptual framework and model, the individual's religious beliefs are regarded as an aspect of the psychological dimension of health, whilst at the aggregate level, they are an aspect of the social environment in that social group membership requires attitudes, beliefs, values and behaviour regarding spiritual matters appropriate for that group. However, they will be included as a separate variable in the 'Health' section, under 'Beliefs' to ensure that this data is collected.

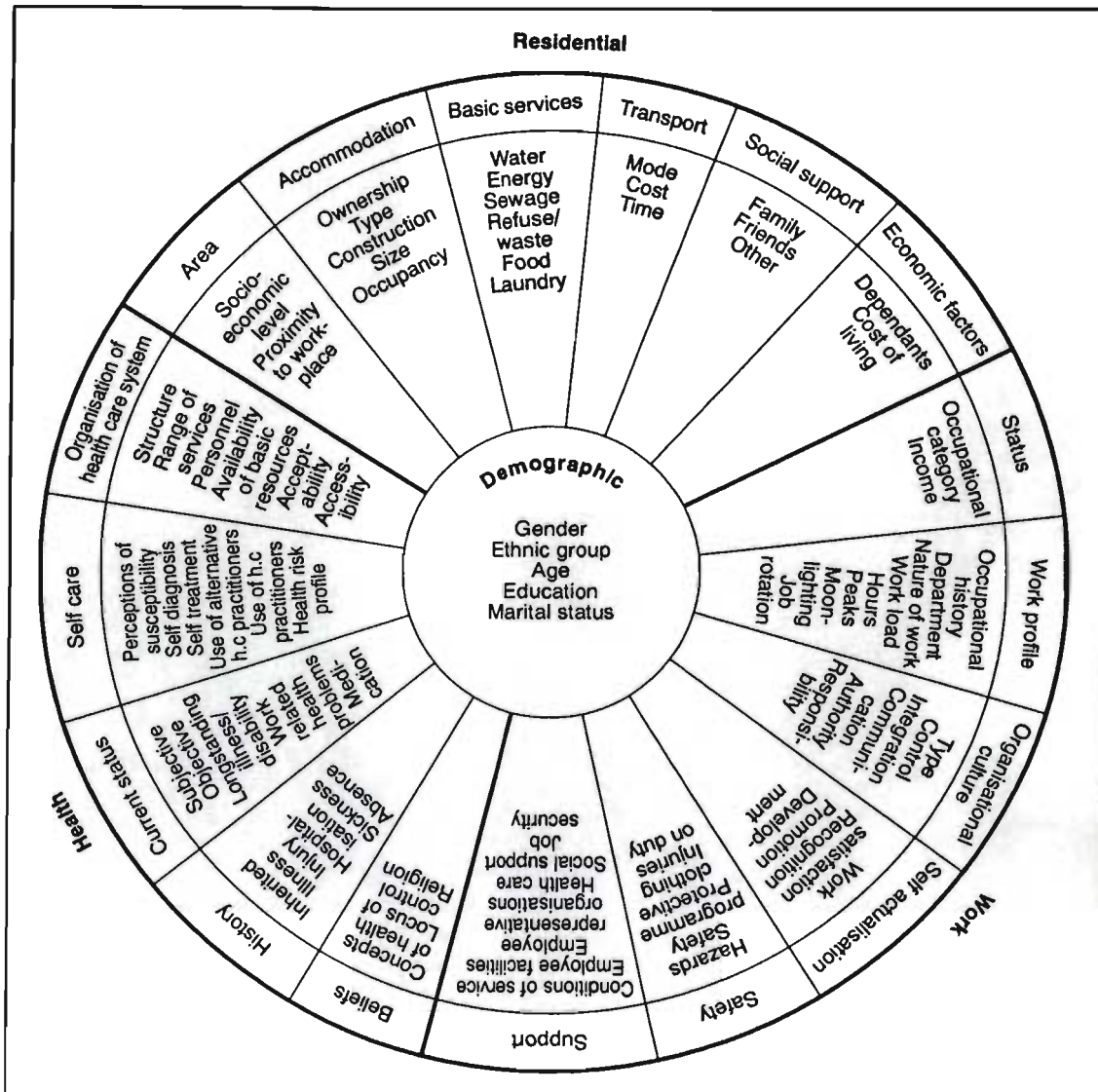


Figure 9.1: Amended categorisation of variables for measurement of aggregate health status

In the 'Work' section, 'Department' will be included under 'Work profile'. Although this was implicit in other variables, such as the occupational category, nature of work and organisational culture, it should appear as a separate variable.

### **9.2 Evaluation and refinement of the strategy for measuring aggregate health status in the workplace**

The field test did not indicate any need to alter the strategy. The manner in which the instrument will be used in conjunction with other parts of the strategy, is discussed in various places throughout Chapter Eight and Schedule One, and it is concluded that the strategy is sufficiently comprehensive to permit the collection of data in all types of organisations, in accordance with the model.

### **9.3 Evaluation and refinement of the instrument**

The field test indicated that a number of changes should be made to the instrument, and these are shown in Schedule One. The nature of these changes will be discussed briefly.

All references to the university have been replaced by 'the organisation', the meaning of which is explained at the beginning of the questionnaire. The occupational nurse will have to delineate the boundaries for the respondent, where an assessment is being conducted in an organisation that is part of a larger organisation. This could be a school, a

construction site or a small factory. Whilst the immediate environment will influence this organisation, it will also be affected by the dynamics of the larger one, particularly in terms of policies and resources. It may also be necessary to include outside contract workers, if they are working within the physical boundaries of the organisation for a protracted period.

Definitions and meanings of words have been included in places, for example authority and responsibility. The wording of some questions has been clarified or simplified.

The data pertaining to work peaks showed that respondents' definitions of peaks vary. A definition has been included to improve this. The peaks varied considerably according to when they occurred and their duration. It is possible that the variations were more marked in this organisation owing to the nature of the work performed.

Only a few items were excluded for being of little value. The questions to elicit details on financial dependents and household composition were considered for removal, however it was decided that this information is important for assessing individual health, and the occupational nurse can use the data as required. A small number of items were added. Although it is acknowledged that the instrument is lengthy and yields a great amount of data, the range of items is necessary to provide a comprehensive assessment. The instrument now consists of 261 items.

A few notes and instructions to the respondents and interviewer have also been included, such as on determining consistency of care.



The same data was elicited by different items relating to health problems. However, these could not be omitted as it would have affected the sensitivity of the instrument. For example, respondents may have reported a longstanding health problem, then later referred to it again as a health problem experienced within the previous two weeks, and possibly again when indicating the experience of a sign or symptom. However, it is also possible that a respondent would not perceive herself as having a health problem and yet her responses for signs or symptoms could indicate a health problem. These questions also serve as cross checks to establish the accuracy of their responses.

In a number of places, data was combined to assess certain aspects, and it is also necessary to discuss these briefly. The quality of the respondents' living quarters were rated to serve as an indicator, as shown in Table 8.6. A scale was developed to assign a rating for objective health status, and this is explained in Chapter Eight (4.3.2). Respondents were assigned a stress rating according to the scale shown in Table 8.54. A score was assigned on the basis of the presence of at least two signs and symptoms and two compensatory behaviours. The associations between the ratings for individuals and selected variables in the study accord with the other research. Furthermore, the respondent who scored the highest stress rating in the study has since died of a stress-related health problem that was not evident at the time of the survey. For these reasons, it is proposed that the rating scale is a useful index, although it is also conceded that it will require further testing. These scales will be included in the instrument. Lastly, respondents' perceptions of susceptibility and suggested actions to

prevent health problems were assessed for congruence with their health risk profile and objective health status.

The detailed information elicited by the instrument indicates that in most places it is sufficiently sensitive for its intended purpose. Other parts of the strategy will yield data on variables that require more detail, for example, the investigation into the organisation's policies and procedures will reveal more about control in the organisation, whilst the inspection of the workplace will provide further data on hazards, especially those of which the respondent is unaware.

The final instrument appears in Annexures 8, 9 and 10.

#### **9.4 Recommendations for use of the model, strategy and instrument**

In view of the dynamic nature of health, the organisation will need to be assessed on an ongoing basis. Therefore, it is recommended that the strategy be used in its entirety to produce an initial occupational health diagnosis. The occupational health programme will then be planned and implemented according to this. Thereafter, it will be necessary to periodically re-investigate problem areas identified from the assessment, in order to evaluate the effectiveness of the programme. Further full assessments will be required, to identify significant changes in the organisation and its members. The frequency of these will depend on the stability of the organisation and the wider community, but it is

recommended that they be conducted at least every two years. The model itself will be used on a daily basis, as it explains the inter-relationships between influences on health in the organisation, and so guides the practice of the occupational nurse.

It is acknowledged that some occupational nurses may experience difficulty in conducting certain aspects of the strategy, and for this reason a training manual giving simple instructions will be produced. In particular, it will contain information on the use of the instrument. The broad details of this information are outlined below.

Firstly, the instrument has been developed for use in all organisations. However, the nurse may wish to include other items to investigate problems specific to that organisation. The question in which aspects for inclusion in the health promotion programme are listed, may require amendments depending upon the prevailing health problems in the population. It is important that this item appears on the page following the one in which respondents are asked to indicate aspects that they would like included in a programme, or it may bias or restrict their response. Members of certain organisations may find some questions to be of a sensitive nature. Therefore the order should be checked to ensure that they appear later in the interview, when the respondent is more at ease.

The data collection process should follow that outlined in 7.3.9. The protection of individuals' rights, discussed in 7.3.4, should also be observed. Individuals must be given the option to refuse to participate in the survey, as it would be unethical for the nurse to expect them to impart personal

information, unless they were prepared to do so. However, when data is collected in other parts of the strategy, all individuals should be included. For example, in assessing work environment hazards.

When planning the survey, it is important that members at all levels of the organisation be included, in order to obtain their support and to ensure that perceived needs are established. Furthermore, unless they are involved, the resultant programme is likely to be inappropriate and ineffective.

When the instrument has been adapted for use in the organisation, it would be advisable for the occupational nurse to conduct a small pilot study on five members to identify any problems. It may be necessary to make adjustments accordingly.

Unless the organisation is small, it will be necessary to draw a stratified random sample, as followed in the field test. The nurse could use tables of random numbers for this process. The strata selected will depend on the characteristics of the organisation. The most likely ones would be based on the demographic features of the workers, the types of appointment, the departments or sections or the nature of the work performed. The number of respondents selected for each stratum should be proportionate to the number of members of that stratum in relation to the total membership of the organisation.

Once the survey has been completed, it will be necessary to code the responses for the open-ended questions. The nurse will have gained some idea of the categories to be used, by the time that all the individuals have been surveyed.

The analysis need only consist of simple descriptive statistics, as a stratified random sample will have been drawn in order to obtain a representative sample. These should include measures of central tendency, measures of dispersion (frequency distributions and range) and cross tabulations. Specific instructions on which measures to use for items and how to compute and interpret them will be supplied. Therefore, it will not be essential that she have access to or knowledge of computerised statistical packages, nor will she need to understand more sophisticated statistical tests.

Lastly, instructions on how to prepare a diagnostic statement from the results, such as the one in Chapter Eight, will also be included.

### 9.5 Conclusion

The essential role of the occupational health nurse in promoting and protecting the health of people in developing countries was outlined in Chapter One. However, it was acknowledged that this was a challenging task, requiring the combination of principles of nursing, community health and communication with a knowledge of the workforce, the work environment and the influences from the wider community to determine health needs and plan effective programmes in the face of scarce resources. To accomplish this, many nurses require re-orientation, particularly because they practice according to a limited conceptualisation of health and its determinants in the workplace, or else they are guided by task-oriented job descriptions that bear little

relevance to real health needs.

Therefore, a model of aggregate health for the work organisation has been developed, to explain how a myriad of influences inter-relate and contribute to health in this setting. The model is based on a conceptualisation of health that overcomes the inadequacies of those used by many nurses. Accordingly, health in the workplace should be measured at an aggregate or collective level, it should take account of the influences between the individual workers, the organisation and the wider community and it should measure health in positive terms. The physical, social, psychological, objective and subjective dimensions of health must be included in the measurement process. Lastly, the potential of work and the work environment for strengthening health as well as adversely affecting it, should be recognised.

A strategy for assessing health and health needs has been devised from the model, to enable the provision of effective occupational health programmes. In this regard, the importance of involving management in protecting and promoting the health of its most valuable assets - its human resources - cannot be underestimated.

Such programmes are especially important as this country stands on the threshold of major changes in the health system and the implementation of potentially far-reaching occupational health legislation, that could herald a new era in occupational nursing.



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Annexure 1: Letter provided for all three employee representative organisations to request participation of their members in the study

A STUDY TO DETERMINE THE AGGREGATE HEALTH STATUS OF XXXXXXXXXX XX XXXXX EMPLOYEES

Current research has shown that whilst a tremendous amount of money is being spent upon curative health services, the general level of wellness amongst the population is not improving. Increasingly, it is becoming apparent that it is necessary to help people to adopt a healthy life-style which will promote health, and thereby enable them to assume more responsibility for their state of health. However, the environment, whether it is the physical, chemical, biological, or social environment, can impede or enhance people's health. Unfortunately it is not always possible for individuals to control the state of the environment in which they must live, and so it becomes a responsibility which the community must exercise.

With regard to the work environment, it is readily accepted that work and health have a reciprocal effect upon each other. Therefore, people who enjoy good health as far as its physical, mental and social dimensions are concerned, will be able to function at optimum efficiency. Similarly, work which is satisfying and encourages self-actualisation will have a positive effect upon the wellness of workers. Given that people are the most important resources in an organisation, it is imperative that their health is actively promoted and protected. This will only be possible if they adopt a healthy life-style and work in an environment which is conducive to health. For this reason it is necessary to establish what the health status and health needs of the employees of the organisation are. In addition, the climate of the organisation must be gauged in order to assess the effects which it is having upon its members. This information will serve as a database to determine the way in which the health of the members of an organisation can be promoted and safeguarded.

In a sincere effort to provide such a database, I have endeavoured to devise an instrument which will establish the aggregate health status of the employees of the XXXXXXXXXX XX XXXXX. It has been divided into a questionnaire, which I will personally deliver to participants, and an interview, which will take place at a time suitable to the participant.

The study will be confined to the XXXXXX XXXXXXXX campus employees, due to time and resource limitations. Only members of the various representative bodies (i.e. XXX, XXXX, XXXX, and XXXX will be approached) as the study will be conducted subject to their approval. The final report will be made available to these bodies for their use in furthering employee interests. They will be involved in order to protect the rights of their members. All levels of employees will be included, with the exception of those who fall into categories which have so few incumbents their anonymity could not be protected.

I have been working in the XXXXXXXXXX XX XXXXXXXX on this campus for the past twelve years, lecturing in community and occupational health nursing. During this time there have been many occasions on which I have observed ill-health, disability and even death amongst our members, which could have been prevented with improved education, health resources



and vigilance; a matter which has caused me great concern. Further, there is a definite need to develop such a strategy which could be used in other organisations. This research will be conducted in fulfillment of a Master of Social Science degree.

A number of measures have been taken to ensure confidentiality of the information revealed. Firstly, the participant's name will not appear anywhere on either the questionnaire or interview (and of course the report). Instead, each person will be assigned a number, which they personally will remove before the two are placed in a sealed box, which will only be opened on completion of the data gathering phase. Secondly, the final research report will reflect the results as aggregates and not on an individual basis. Therefore it will not be possible to identify individuals from the report. Thirdly, the completed questionnaires and interviews will not be seen by anyone other than myself and will be destroyed after analysis.

While I would appeal to you to participate in the survey, I wish to make it clear that no pressure will be brought to bear on anyone in any way to do so. Furthermore, should you decide to participate and then feel uncomfortable about answering any of the questions in the questionnaire or interview, these particular questions may be left unanswered. The interview and questionnaire should take one hour to complete in total.

MRS L.D.GRAINGER  
12 May, 1991.

Annexure 2: Letter published in the newsletter of Employee Representative Organisation No.2

A STUDY TO DETERMINE THE AGGREGATE HEALTH STATUS OF XXXXXXXXXXXX XX XXXXX EMPLOYEES

It is readily accepted that work and health have a reciprocal effect upon each other. Therefore, people who enjoy good health as far as its physical, mental and social dimensions are concerned, will be able to function at optimum efficiency. Similarly, work which is satisfying and encourages self-actualisation will have a positive effect upon the wellness of workers. Given that people are the most important resources in an organisation, it is imperative that their health is actively promoted and protected. This will only be possible if they adopt a healthy life-style and work in an environment which is conducive to health. For this reason it is necessary to establish the health status and health needs of the employees of the organisation. In addition, the climate of the organisation must be gauged in order to assess its effects upon its members. This information will serve as a database to determine the way in which the health of the members of an organisation can be promoted and safeguarded.

During the past twelve years I have worked in the XXXXXXXXXXXX XX XXXXXXXX, teaching community and occupational health nursing, and have often been distressed by ill-health, disability and death amongst the University employees, which could have been prevented with improved health knowledge, health resources and vigilance. I therefore decided that a study to investigate the above issues would be worthwhile, and approached the University executive for permission. Whilst this was granted, I concluded that such a study should be conducted through the various employee representative bodies rather than the University administration. Their involvement was regarded as essential because of their representation of employee needs, protection of employee rights, and in the hope that it would allay possible fears that information obtained could jeopardise jobs. Due to the personal nature of some questions, particular consideration has been given to ensuring confidentiality and anonymity. The questionnaires and interviews, which I will personally administer, will not reflect the names of the respondents nor will they appear in the report. The latter will be presented in a way which will not permit the identification of individuals. Nevertheless, no-one will be pressured into participating in the study or answering questions which they feel uncomfortable about.

Earlier in the year, XXXX members were advised of the intention to conduct the study, and no negative feedback was received. Having developed the instrument, I now wish to interview a random 5% sample of members working on the XXXXXXXX XXXXXXXX campus, and appeal to you for your assistance with this stage of the study, should I approach you. Any XXXX member who feels that they would like to contribute information relevant to the occupational health of XXXXXXXXXXXX XX XXXXX employees is most welcome to contact me.

The study has been confined to the XXXXXXXX XXXXXXXX owing to time and resource limitations, but could be extended if the initial results indicate that this would be advantageous. The Registrar has stated that these interviews must not be carried out during University time, a

proviso which I shall respect. The findings of the study will be made available to the employee representative bodies for their use in furthering employee interests, particularly with respect to encouraging a positive and rewarding working environment, which does not compromise employee health.

Thanking you, in anticipation of your support,

Mrs Linda Grainger.

(Address and telephone number supplied.)

20 September, 1991.

Annexure 3: Questionnaire used for the pilot study

ASSESSMENT OF THE AGGREGATE HEALTH STATUS OF UNIVERSITY OF NATAL EMPLOYEES

RESPONDENT'S NUMBER:

QUESTIONNAIRE

I. BIOGRAPHIC AND DEMOGRAPHIC DATA

2 MARITAL STATUS:

- 1. single
- 2. single but promised or engaged, and not living together
- 3. common law marriage/permanent relationship/promised or engaged and living together
- 4. married and living together
- 5. married but separated
- 6. divorced
- 7. widowed

2. NUMBER OF CHILDREN:

3. FINANCIAL DEPENDENTS:

NO.	AGE	GENDER	RELATIONSHIP	DEGREE OF DEPENDENCY
1.				
2.				
3.				
4.				
5.				
6.				
7.				
8.				
9.				
10.				

(Dependency will be deemed: a financial contribution at least every two months towards a person's living costs)

II. NON-OCCUPATIONAL DATA

1. RESIDENTIAL ADDRESS

- 1. Please state your residential area (not street name or number):
- 2. If your family does not live with you at this address, please state the area where they reside:

2. TRANSPORT

- 1. How do you usually get to work? (You may tick more than one method)

- |  |                          |                      |                          |
|--|--------------------------|----------------------|--------------------------|
| 1. on foot   | <input type="checkbox"/> | 5. private lift club | <input type="checkbox"/> |
| 2. bicycle   | <input type="checkbox"/> | 6. taxi/minibus      | <input type="checkbox"/> |
| 3. motorcycle/moped/scooter  | <input type="checkbox"/> | 7. bus               | <input type="checkbox"/> |
| 4. own motor vehicle (no regular passenger who contributes to costs) | <input type="checkbox"/> | 8. train             | <input type="checkbox"/> |
|  |                          | 9. other             | <input type="checkbox"/> |

2. Approximately how long does it take you to travel to work?
3. Approximately how much do you spend on transport to and from work each day?

### III. OCCUPATIONALLY ASSOCIATED DATA

#### 1. EDUCATIONAL STATUS

1. Standard completed:
2. Post-secondary qualifications:
3. Tertiary qualifications:
4. Other (eg. certificated courses):

#### 2. OCCUPATIONAL HISTORY (i.e. positions held prior to this one)

NO.	TYPE OF ORGANISATION	DEPARTMENT	POSITION HELD	PERIOD IN THIS POSITION
1.				
2.				
3.				
4.				
5.				
6.				
7.				
8.				
9.				
10.				

#### 3. HOURS OF WORK FOR THE UNIVERSITY

1. Please state the average number of hours worked weekly (not peak periods):
  - i. at the workplace:
  - ii. at home:
2. During non-peak periods, do you usually work:
  - i. fixed hours:
  - ii. flexi-time, complete period at the workplace:
  - iii. flexi-time, part of the period at home:
  - iv. shiftwork:
3. Do you experience peaks in your workload?
  - i. yes:
  - ii. no:
4. If yes, please state:
  - i. when these peaks occur (eg. at the end of the every month):
  - ii. how long the peak usually lasts:

iii. average daily number of hours worked during this period:

5. How supportive and tolerant is your spouse/partner of your workload usually?

1. supportive and tolerant	2. tolerant but not supportive	3. intolerant
----------------------------	--------------------------------	---------------

6. Please describe their behaviour to support your answer:

4. WORK DESCRIPTION

1. Please briefly describe the nature of your work:

5. SOCIAL COHESION WITHIN THE UNIVERSITY

How would you describe the social cohesion within the University in respect of:

- 1. Mutual support between employees in your department in times of personal or work problems:
- 2. Support from the upper levels of management for employees in times of personal or work problems:
- 3. Co-operative functioning between departments/sections/units:

(Please substantiate your answers)

6. WORK CONTRIBUTION TO THE UNIVERSITY

1. Do you feel that your work contribution is valued by your superiors?

1. yes, usually	2. sometimes	3. not usually	4. do not know
-----------------	--------------	----------------	----------------

- 2. Please give reasons for your answer and, if necessary, relate your perceptions to the level of the organisation:
- 3. In view of the lack of funds to increase salaries, are there any other ways in which your work contribution could be rewarded? Please differentiate between levels of the organisation (eg. at executive level as opposed to departmental/section/unit level).



7. ADDITIONAL WORK

1. Do you take on other work besides that which you perform for the University, to augment your salary?

1. yes, regularly	2. sometimes	3. no, not at all
-------------------	--------------	-------------------

2. If 1 or 2, please state:
- i. nature of work performed:
  - ii. frequency (average number of times per month):
  - iii. how this additional income is generally used:

8. WORK SATISFACTION

1. Please indicate how much work satisfaction or enjoyment you derive from your work:

- 1. relatively high satisfaction
- 2. some dissatisfaction to moderately high satisfaction
- 3. dissatisfaction to moderate satisfaction
- 4. usually dissatisfied


(Likert,R., 1967, p. 200)

2. If 3 or 4, please give reasons for your answer:

3. Do you feel that you have enough authority to carry out your work satisfactorily?

1. yes, usually	2. sometimes	3. not usually	4. do not know
-----------------	--------------	----------------	----------------

4. If 2, 3 or 4, please explain why you feel this way:

5. Do you feel that you are given enough responsibility with regard to carrying out your work?

1. yes usually	2. sometimes	3. not usually	4. do not know
----------------	--------------	----------------	----------------

6. If 2, 3 or 4, please explain why you feel this way:

7. To what extent are you involved in decision-making in relation to your work?

- 1. fully involved in all decisions related to your work:
- 2. usually consulted but not usually involved in decision-making:
- 3. never involved in decisions; occasionally consulted:
- 4. not at all:


(Likert,R., 1967, p. 207)

9. COMMUNICATION

1. Please indicate the extent to which information that is necessary to you for the performance of your work, is shared by your superiors:

- 1. superior seeks to give subordinates all relevant information and all information requested:
- 2. superior gives information needed and answers most queries:
- 3. superior gives subordinates only the information the superior feels they need:
- 4. superior provides minimum of information:


(Likert,R., 1967, p. 201)

2. How often do you receive conflicting instructions from your superiors?

1. very frequently	2. frequently	3. sometimes	4. rarely
--------------------	---------------	--------------	-----------

3. How frequently do your superiors (the next two levels above you) change instructions which they have issued to you?

1. very frequently	2. frequently	3. sometimes	4. rarely
--------------------	---------------	--------------	-----------

10. JOB RATING SYSTEM

1. Are you satisfied with the current method of job rating being used by the University?

1. yes	2. no	3. do not know
--------	-------	----------------

2. If 2 or 3, please give reasons for your answer:

11. PROMOTION SYSTEM

1. Are you satisfied with the current promotion system regarding promotion of employees within your department/section/unit?

1. yes	2. no	3. do not know
--------	-------	----------------

2. Please give reasons for your answer:

3. Do you anticipate that you will be promoted under this system?

1. yes	2. no	3. do not know
--------	-------	----------------

4. If 2 or 3, please explain why you feel this:

5. Do you wish to be promoted?

1. yes	2. no	3. do not know
--------	-------	----------------



6. If yes, please tick any of the following aspects which you think would be useful/interesting:
- i. evaluation and monitoring of work environment to promote a healthy work environment
  - ii. physical fitness and exercise programme
  - iii. nutrition
  - iv. weight control
  - v. smoking cessation
  - vi. communication skills
  - vii. leadership skills
  - viii. stress management
  - ix. management and prevention of depression and suicide
  - x. alcohol and substance abuse prevention and control
  - xi. accident prevention
  - xii. first aid
  - xiii. prenatal and postnatal health care
  - xiv. pre-retirement preparation
  - xv. back care
  - xvi. cardio-pulmonary fitness
  - xvii. cardio-pulmonary resuscitation
  - xviii. hypertension screening and management

## Annexure 4: The interview schedule used for the pilot study

## ASSESSMENT OF THE AGGREGATE HEALTH STATUS OF XXXXXXXXXXXX EMPLOYEES

## INTERVIEW SCHEDULE

## I. BIOGRAPHIC AND DEMOGRAPHIC DATA

1. GENDER
2. ETHNIC GROUP
3. RANK/OCCUPATIONAL CATEGORY
4. APPOINTMENT
5. DEPARTMENT
6. MEMBERSHIP OF EMPLOYEE REPRESENTATIVE ORGANISATION
- (7. If appropriate, ask whether the respondent has more than one wife, i.e. traditional marraiges.)
8. AGE

## II. NON-OCCUPATIONAL DATA

## 1. DESCRIPTION OF LIVING QUARTERS

1. What kind of dwelling do you live in?
2. Do you own or rent this dwelling?
3. What is the dwelling constructed from?
4. How many rooms does the house have?
5. Please indicate household composition: relationship to respondent/gender/age.  
(If in a hotel or hostel, give details of respondent's room occupancy.)
6. Please indicate the water supply for the dwelling.
7. Please indicate the method of sewage disposal for the dwelling.
8. Please indicate the method of refuse disposal utilised by the occupants.
9. Please indicate the type/s of energy supply for the dwelling.  
(If more than one type is used, please state the purpose/s for each one.)
10. If you live in a hostel or rented room, please describe how you usually obtain your main meal of the day (i.e. when it is cooked, by whom, and food storage facilities.)
11. If you live in a hostel or rented room, please describe how you usually get your laundry done (i.e. washing and drying facilities/by whom).

## 1. WORKLOAD

With regard to your workload, do you regularly experience any of the following?

1. Quantitative overload i.e too much to do
2. Quantitative underload i.e too little to do
3. Qualitative overload i.e work that is too difficult to do
4. Qualitative underload i.e. work that is too easy to do
5. Combination of the above

Where you have answered 'yes', please indicate the frequency, the work responsibilities/tasks particularly associated with this experience and the effects which this has on you (i.e. how this makes you feel).

## 2. OCCUPATIONAL SAFETY

1. Please list the health and safety hazards associated with your work and workplace.
2. Please describe your involvement in the occupational safety programme for your department/section/unit.
3. Who is the safety representative for your department/section/unit?
4. Do you feel that the occupational safety programme for your department/section/unit is effective?

1. yes	2. no	3. don't know
--------	-------	---------------

5. If 2, or 3, please explain:
  - i. why you think it is ineffective
  - ii. how it could be improved
6. Have you received an injury on duty (IOD) during the past 12 months?

1. yes	2. no
--------	-------

7. If 1, please state:
  - i. type of injury/ies
  - ii. site of injury/ies
  - iii. how the injury occurred
  - iv. how it/they could have been prevented
  - v. whether you reported the injury as an IOD
  - vi. if no or don't know, why you did not report it
  - vii. if yes, what happened as a result of your report
8. Are you required by management to wear protective clothing whilst performing any aspect of your work?

1. yes	2. no	3. don't know
--------	-------	---------------

9. If yes, please state:
  - i. type of clothing in relation to the task performed
  - ii. whether you do wear it

1. yes always    2. usually    3. sometimes    4. not at all

  - iii. if 3 or 4, please give the reason/s for your answer



1. Do you belong to a medical aid scheme/society?

1. yes	2. no
--------	-------

2. If yes, please state the name of your medical aid scheme/society.
3. Please state the reason for your answer (i.e. membership of this particular society/scheme or non-membership).

#### 4. JOB INSECURITY

1. Do you worry that your job may be made redundant in view of the present financial situation?

### IV. GENERAL HEALTH PROFILE

#### 1. PERCEPTIONS OF HEALTH

1. How would you define 'good health' in your own words?
2. How would you describe your own current state of health?
3. If you feel that your state of health could improve, please indicate:
  - i. how this could be achieved
  - ii. whether you could achieve it with the current resources and facilities available to you

1. yes	2. no	3. don't know
--------	-------	---------------

- iii. if no, what additional resources and facilities you would require

#### 2. PAST HISTORY OF ILL-HEALTH OR INJURY

1. Have you experienced any serious illness, injuries or undergone any operations?
2. If yes, please state:
  - i. what these were
  - ii. approximately when they occurred
3. Were you admitted to hospital in the past twelve months?

1. yes	2. no
--------	-------

4. If yes, for each admission, please state:
  - i. the reason for admission
  - ii. the month of admission
  - iii. the approximate length of hospital stay
  - iv. the approximate cost of the hospital stay (personal and medical aid)
5. How many days sick leave have you taken this year?
6. What was/were the predominant reason/s?

#### 3. CURRENT HEALTH STATUS

1. Do you have any long-standing health problem or disability that you are aware of?

1. yes	2. no
--------	-------

2. If yes, please state what it is:

3. Do you think your present or previous occupation might have contributed to the development of this problem?

1. yes	2. no	3. don't know
--------	-------	---------------

4. If yes, please state:

- i. the nature of the work performed
- ii. how it could have contributed to the health problem

5. Did this health problem necessitate a change of occupation or type of work?

1. yes	2. no
--------	-------

6. Do you anticipate that it will affect your ability to work in the future (i.e. with the passage of time)?

1. yes	2. no	3. don't know
--------	-------	---------------

7. If yes, please describe how it could affect your ability to work?

8. What medicines have you taken in the last two weeks (prescribed and over-the-counter)?

9. Who prescribed or suggested you take these medicines?

- 1. general practitioner in private practice
- 2. doctor at provincial/state hospital/OPD/clinic
- 3. specialist in private practice
- 4. pharmacist
- 5. other - please state whom

10. Who do you go to for help when you are not well?

11. How often have you gone to this person for help in the last three months?

12. What was/were the health problem/s which you went to see them about?

13. Do you regularly visit a doctor or clinic for a health check-up?

1. yes	2. no
--------	-------

14. If yes, please state:

- i. what you are checked for
- ii. where you go for this check-up
- iv. who performs the check-up (professional category only)

15. In the past two weeks, were there any days on which you were unable to work due to a health problem?

1. yes	2. no
--------	-------

16. If yes, please state:

- i. what the problem was
- ii. how many days you were unable to work

- iii. who helped you to decide what to do about this problem  
 iv. whether you wished to consult a doctor

1. yes	2. no
--------	-------

- v. if yes, whether you did consult a doctor

1. yes	2. no
--------	-------

- vi. if no, why you did not consult a doctor

1. insufficient time - too busy at work
2. insufficient time - takes too long to wait to see the doctor
3. too much effort
4. costs too much to get to doctor
5. costs too much to see doctor
6. other - please specify

4. USE OF THE HEALTH CARE SYSTEM: CONSULTATION OF DOCTORS

When you need to see a doctor for a general health problem:

1. Who do you usually consult (select from categories)?

1. doctor at work clinic
2. doctor at provincial/state clinic/PHC centre
3. doctor at provincial/state hospital
4. general practitioner in private practice
5. specialist in private practice (state speciality)
6. other - please specify:  
 (More than one category may be selected, but specify the nature of the problem for each.)

2. Why do you consult this doctor?

3. Where do you have to go to see this doctor?

4. How long do you usually have to wait to go in once you have arrived there?

5. Is it usually convenient for you to visit this doctor?

1. yes	2. sometimes	3. no
--------	--------------	-------

6. If sometimes or no, please explain why it is inconvenient:

7. How much does it cost for a consultation (personal and medical aid cost)?

8. Are you usually satisfied with the outcome?

1. yes	2. no
--------	-------

9. If no, please explain why you are dissatisfied:

5. USE OF THE HEALTH CARE SYSTEM: CONSULTATIONS DURING WORKING HOURS

1. If you need to see a doctor during working hours is it usually easy?

1. yes	2. no
--------	-------

2. If no, please explain why:

#### 6. USE OF HEALTH CARE SYSTEM: ANTENATAL CARE

To be answered by women who have been pregnant during the last two years, whilst employed at the University.

1. Did you receive regular antenatal care?

1. yes	2. no
--------	-------

2. If no, please state why you did not:

1. unable to take time off work
2. cost too much for transport
3. cost too much for antenatal visits
4. did not feel antenatal care was important
5. available antenatal care facilities were unsuitable or unattractive - please specify reason
6. other - please specify:

3. If yes, please state:

i. who from (select from the categories provided)

1. private midwife
2. local community clinic (i.e. professional community health nurse)
3. provincial/state hospital/clinic
4. private general practitioner
5. private obstetrician
6. other - please specify:

ii. where you went for this care

iii. at what stage of your pregnancy you commenced antenatal care

#### 7. USE OF HEALTH CARE SYSTEM: CAMPUS SERVICES

1. What health services exist on the campus which could be used by employees experiencing a health problem?

2. Do you use the clinic on the campus?

1. yes, often	2. sometimes	3. no, not usually
---------------	--------------	--------------------

3. If no, why not?

4. If yes or sometimes, please state:

- i. the nature of the complaint for which you last visited the clinic
- ii. why you chose to use the clinic and not some other health care service

5. Do you feel that the service on the campus could be broadened?

1. yes	2. no	3. don't know
--------	-------	---------------

6. If yes, please state:

- i. in what way
- ii. why you feel this would be advantageous

#### V. HEALTH RISK PROFILE

1. HEIGHT

4. PULSE

- 2. MASS
- 3. GRAVIDA/PARA
- 7. PERSONAL HEALTH RISKS
- 5. RESPIRATION
- 6. BLOOD PRESSURE

Have you experienced any of the following lately?

- 1. Chronic fatigue (duration)
- 2. Persistent headaches (duration)
- 3. Nightsweats (duration)
- 4. Persistent pain (site and duration)
- 5. Persistent change in bowel habits (nature of change and duration)
- 6. Persistent change in bladder habits (nature of change and duration)
- 7. A sore that has taken longer than usual to heal (site and duration)
- 8. Unusual bleeding (site, amount and duration)
- 9. Unusual discharge (site, amount and duration)
- 10. Thickening or lump in breast or elsewhere (site, nature and duration)
- 11. Persistent indigestion (duration)
- 12. Persistent difficulty in swallowing (duration)
- 13. Obvious change in wart or mole (nature of change and duration)
- 14. Persistent cough (type and duration)
- 15. Persistent hoarseness of voice (duration)
- 16. Persistently heavy periods (average length of period and duration)
- 17. Persistent constipation (duration)
- 18. Persistent diarrhoea (duration)
- 19. Persistent feelings of hopelessness or helplessness (duration)
- 20. Persistent depression (duration)
- 21. Persistent lack of sleep (duration, average number of hours of sleep per night and average number of times of waking)
- 22. Loss of weight (amount and duration)

#### 8. SMOKING

1. Do you currently smoke cigarettes or a pipe?

1. yes	2. no
--------	-------

2. If no, have you smoked previously?

1. yes	2. no
--------	-------

3. If yes, please state:

- i. when you stopped smoking
- ii. what your average daily consumption was

4. If you do smoke, how many cigarettes or pipes do you smoke per day?

#### 9. ALCOHOL CONSUMPTION

1. Do you drink alcoholic beverages?

1. yes	2. no
--------	-------

2. What type of alcoholic beverage do you usually drink?

3. How many glasses/bottles/cans of these do you drink in a week on average?

10. LEISURE ACTIVITIES

1. Please provide details concerning your sport and non-sport leisure time activities (type and average amount of time spent per week/month on each one).

11. EXERCISE

Please indicate the frequency of exercise obtained during an average week):

1. Occupational exercise

1. sedentary occupation
2. minimal occupational exertion
3. moderate occupational exertion, no sweating
4. moderate occupational exertion, to the point of sweating
5. intensive occupational exertion with sweating for at least 30 minutes

2. Recreational exercise

1. no recreational exertion
2. minimal recreational exertion
3. moderate recreational exertion
4. moderate recreational exertion, to the point of sweating
5. intensive recreational exertion with sweating for at least 30 minutes

12. CAFFEINE INTAKE

1. Number of cups/cans of coffee (not decaffeinated)/tea/cocoa/cola per day:

13. PERCEPTION OF HEALTH RISK

1. Taking account of your family history, life-style, past and current health status, do you think that you are at risk of developing any serious health problem in the future?

1. yes	2. no
--------	-------

2. If yes, please state:

- i. the type of health problem/s
- ii. whether you think that any action can be taken to prevent the development of the health problem/s

1. yes	2. no	3. don't know
--------	-------	---------------

- iii. if yes, what action could be taken
- iv. whether you would be prepared to take this action

1. yes	2. no	3. don't know
--------	-------	---------------

- v. if no or do not know, please explain why you feel this way.



Annexure 5: Questionnaire used for the field test

ASSESSMENT OF THE AGGREGATE HEALTH STATUS OF UNIVERSITY OF XXXXX  
EMPLOYEES

RESPONDENT'S NUMBER:

QUESTIONNAIRE (1)

Please place a X in the appropriate box, where applicable.

I. BIOGRAPHIC AND DEMOGRAPHIC DATA

1. MARITAL STATUS

1. single
2. single but promised or engaged, and not living together
3. common law marriage/permanent relationship/promised or engaged and living together
4. married and living together
5. married but separated
6. divorced
7. widowed


2. NUMBER OF CHILDREN

How many children do you have?

(Please include step-children, adopted children and grown-up children)

3. FINANCIAL DEPENDENTS

Please supply the following information about people who depend on you for financial support:

NO.	AGE	GENDER	RELATIONSHIP*	DEGREE OF DEPENDENCY+
1.				
2.				
3.				
4.				
5.				
6.				
7.				
8.				
9.				
10.				

\*Relationship means family member (e.g. mother, daughter), friend, etc.

+Degree of dependency means sole or partial support towards a person's living costs.

## II. NON-OCCUPATIONAL DATA

## 1. RESIDENTIAL AREA

1. Please state where you live during your working week (suburb, not street name or number - e.g. Umbilo, Umlazi, etc.):
  
2. If you have to live away from your close family (e.g. spouse/partner and young children) in order to work, please state the area where they live:

## 2. TRANSPORT

1. How do you usually get to work? (You may put a X against more than one method)

- |  |                          |                      |                          |
|--|--------------------------|----------------------|--------------------------|
| 1. on foot   | <input type="checkbox"/> | 5. private lift club | <input type="checkbox"/> |
| 2. bicycle   | <input type="checkbox"/> | 6. taxi/minibus      | <input type="checkbox"/> |
| 3. motorcycle/moped/scooter  | <input type="checkbox"/> | 7. bus               | <input type="checkbox"/> |
| 4. own motor vehicle (no regular passenger who contributes to costs) | <input type="checkbox"/> | 8. train             | <input type="checkbox"/> |
|  |                          | 9. other             | <input type="checkbox"/> |

2. Approximately how long does it usually take you to travel to work (including time spent waiting for transport)?

1. 0 - 29 minutes	2. 30 - 59 minutes	3. 60 - 89 minutes	4. 90 - 119 minutes	5. 120+ minutes
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

3. Approximately how much money do you spend on transport to and from work each day?

If you are in a private lift club, please state how much it costs you to travel to and from work each week:

If you use your own vehicle and do not know how much it costs you, please state

- i. the type of vehicle:
- ii. the engine capacity:
- iii. distance from home to work in kilometres:

## III. OCCUPATIONALLY ASSOCIATED DATA

## 1. EDUCATIONAL STATUS

What standard have you completed and passed?

- |                    |                          |                             |                          |
|--------------------|--------------------------|-----------------------------|--------------------------|
| 1. less than std 1 | <input type="checkbox"/> | 8. std 7                    | <input type="checkbox"/> |
| 2. std 1           | <input type="checkbox"/> | 9. std 8                    | <input type="checkbox"/> |
| 3. std 2           | <input type="checkbox"/> | 10. std 9                   | <input type="checkbox"/> |
| 4. std 3           | <input type="checkbox"/> | 11. std 10                  | <input type="checkbox"/> |
| 5. std 4           | <input type="checkbox"/> | 12. post-matric certificate | <input type="checkbox"/> |
| 6. std 5           | <input type="checkbox"/> | or diploma                  | <input type="checkbox"/> |
| 7. std 6           | <input type="checkbox"/> | 13. university degree       | <input type="checkbox"/> |

## 2. HOURS OF WORK FOR THE UNIVERSITY

1. Please state the average number of hours worked weekly (not peak periods):
  - i. at the workplace:
  - ii. at home:
2. During non-peak periods, do you usually work:
  - i. fixed hours:
  - ii. flexi-time, complete period at the workplace:
  - iii. flexi-time, part of the period at home:
  - iv. shiftwork:

3. Do you experience peaks in your workload?

1. yes, regularly	2. occasionally	3. not at all

4. If yes, please state:

- i. when these peaks occur (eg. at the end of the every month):
- ii. how long the peak usually lasts:
- iii. average daily number of hours worked during this period:

5. How supportive is your spouse/partner of your workload usually?

1. supportive and tolerant	2. tolerant but not supportive	3. intolerant

6. Please give examples of his/her behaviour to explain your answer to question 5 (e.g. helps with household chores):

## 3. SOCIAL COHESION WITHIN THE UNIVERSITY

1. Have you experienced any personal problems which have caused you great worry whilst working in this job?

1. yes	2. no
--------	-------

2. If yes, please state (where applicable) whether you feel you have been given enough support from:

		yes, usually	sometimes	not usually
i.	colleagues in your section/unit			
ii.	the head of your section/unit			
iii.	the head of your department			
iv.	Personnel Department			
v.	others (please specify)			

3. Have you experienced any work-related problems which have caused you great worry whilst working in this job?

1. yes	2. no

4. If yes, please state (where applicable) whether you feel you have been given enough help from:

	yes, usually	sometimes	not usually
i. colleagues in your section/unit			
ii. the head of your section/unit			
iii. the head of your department			
iv. the dean of the faculty (academic staff only)			
v. the relevant vice-principal			
vi. your staff association or trade union			
vii. others (please specify)			

4. WORK CONTRIBUTION TO THE UNIVERSITY

1. Do you feel that your work contribution is valued by the person immediately in charge of you?

1. yes, usually	2. sometimes	3. not usually	4. do not know

2. Please explain why you feel this way?

3. In view of the lack of funds to increase salaries, are there any other ways in which you feel your work effort could be rewarded?

1. yes	2. no	3. don't know

4. If yes, please describe in what way/s:

5. ADDITIONAL WORK

1. Do you take on other work, besides that which you perform for the University, to increase your earnings?

1. yes, regularly	2. sometimes	3. no, not at all

2. If 1 or 2, please state:
- i. type of work performed:

- ii. frequency - average number of times per:

1. day	2. week	3. month	4. year

- iii. whether you could meet your basic living costs without this additional income:

1. yes, usually	2. sometimes	3. not usually

- iv. how this additional income is generally used (e.g. to help with basic living costs, education for children, holidays:

6. WORK SATISFACTION

1. Please indicate how much work satisfaction or enjoyment you derive from your work:

1. relatively high satisfaction
2. some dissatisfaction to moderately high satisfaction
3. dissatisfaction to moderate satisfaction
4. usually dissatisfied


(Likert,R., 1967, p. 200)

2. If 3 or 4, please give reasons for your answer:

3. Do you feel that you have enough authority to carry out your work satisfactorily?

1. yes, usually	2. sometimes	3. not usually	4. do not know

4. If 2, 3 or 4, please explain why you feel this way:

5. Do you feel that you are given enough responsibility with regard to carrying out your work?

1. yes usually	2. sometimes	3. not usually	4. do not know

6. If 2, 3 or 4, please explain why you feel this way:

7. To what extent are you involved in decision-making in relation to your work?

1. fully involved in all decisions related to your work

2. usually consulted but not usually involved in decision-making

3. never involved in decisions, occasionally consulted

4. not at all
- 

(Likert,R., 1967, p. 207)

7. COMMUNICATION

1. Please indicate the extent to which information that is necessary to you for the performance of your work, is shared by your superior (person immediately in charge of you):

1. superior tries to give subordinate all relevant information and all information requested

2. superior gives subordinates information needed and answers most of subordinate's queries

3. superior gives only the information the superior feels is needed

4. superior provides minimum of information for the subordinate
- 

(Adapted from Likert,R., 1967, p. 201)

2. How often do you receive conflicting instructions from your superior?

1. very frequently	2. frequently	3. sometimes	4. rarely

3. How frequently does your superior change the instructions which he/she has given to you?

1. very frequently	2. frequently	3. sometimes	4. rarely

8. JOB RATING SYSTEM (To be answered by non-academic staff only)

1. Are you satisfied with the current method of job rating being used by the University?

1. yes	2. no	3. do not know

2. If 2 or 3, please give reasons for your answer:

9. PROMOTION SYSTEM

1. Are you satisfied with the current promotion system regarding promotion of employees within your department/section/unit?

1. yes	2. no	3. do not know



2. Please give reasons for your answer:

3. Do you anticipate that you will be promoted under this system?

1. yes	2. no	3. do not know

4. If 2 or 3, please explain why you feel this:

5. Do you wish to be promoted?

1. yes	2. no	3. do not know/not sure

6. Please explain why you feel like this:

10. VACATION LEAVE (To be answered by non-academic staff only)

1. How many days vacation leave do you still have for this year?  
(An approximate number is adequate)

i. compulsory:

ii. cumulative:

2. How often are you able to take vacation leave when it would best suit you from a personal point of view? (This refers to requests for 5 or more days leave only)

1. very frequently	2. frequently	3. sometimes	4. rarely

3. If 3 or 4, please state the reasons for not being able to do so:

11. CHILD CARE

1. If you are a working mother, have you been able to make adequate arrangements for the care of your child/children while you are at work?

1. yes	2. no

2. If 2, please describe the problems you have had:

12. MEDICAL AID SCHEME

1. Do you belong to the University's medical aid scheme?

1. yes	2. no

2. If yes, are you satisfied with the scheme?

1. yes, usually	2. sometimes	3. not usually

3. If 2 or 3, please explain why you feel this way:

#### IV. GENERAL HEALTH PROFILE

##### 1. HEALTH PROMOTION

1. Would you like to learn more about how to promote or protect your health?

1. yes	2. no	3. do not know

2. If no, please explain why you feel this:

3. If yes, please state what you would like to learn more about:

4. If a health promotion programme, which had been planned with employees according to their needs, was offered at work would you participate in it?

1. yes	2. no	3. do not know

5. If no or do not know, please state the reason for your answer:

6. If yes, please put a cross next to any of the following aspects which would be useful/interesting to you:
- i. evaluation and monitoring of work environment to promote a healthy work environment
  - ii. physical fitness and exercise programme
  - iii. nutrition
  - iv. weight control
  - v. smoking cessation
  - vi. communication skills
  - vii. leadership skills
  - viii. stress management
  - ix. management and prevention of depression and suicide
  - x. alcohol and substance abuse prevention and control
  - xi. accident prevention
  - xii. first aid
  - xiii. prenatal and postnatal health care
  - xiv. pre-retirement preparation
  - xv. back care
  - xvi. cardio-pulmonary fitness (to prevent heart and circulatory disease)
  - xvii. cardio-pulmonary resuscitation
  - xviii. hypertension (high blood pressure) screening and management
  - xix. AIDS
  - xx. family planning or spacing

Thank you for your assistance.

Annexure 6: Interview schedule used for the field test

ASSESSMENT OF THE AGGREGATE HEALTH STATUS OF UNIVERSITY OF XXXXX  
EMPLOYEES

INTERVIEW SCHEDULE (2)

I. BIOGRAPHIC AND DEMOGRAPHIC DATA

1. GENDER

2. ETHNIC GROUP

3. RANK/OCCUPATIONAL CATEGORY

4. APPOINTMENT

5. DEPARTMENT

6. MEMBERSHIP OF EMPLOYEE REPRESENTATIVE ORGANISATION

(7. If appropriate, ask whether the respondent has more than one wife,  
i.e. traditional marriages.)

8. AGE

II. NON-OCCUPATIONAL DATA

1. DESCRIPTION OF LIVING QUARTERS

1. What kind of dwelling do you live in?

2. Do you own or rent this dwelling?

3. What is the dwelling constructed from?

4. How many rooms does the house have?

5. Please indicate household composition: relationship to  
respondent/gender/age.

(Exclude people who are visiting for less than one month.)

(If in a hotel or hostel, give details of respondent's room  
occupancy.)

6. Please indicate the water supply for the dwelling.

7. Please indicate the method of sewage disposal for the dwelling.

8. Please indicate the method of refuse disposal utilised by the  
occupants.

9. Please indicate the type/s of energy supply for the dwelling.

(If more than one type is used, please state the purpose/s for  
each one.)

10. If you live in a hostel or rented room, please describe how you  
usually obtain your main meal of the day (i.e. when it is

cooked, by whom, and food storage facilities.)

11. If you live in a hostel or rented room, please describe how you usually get your laundry done (i.e. washing and drying facilities/by whom).

### III. OCCUPATIONALLY ASSOCIATED DATA

#### 1. OCCUPATIONAL HISTORY

Please give details of your previous work positions (jobs): type of organisation/department/position held/period in this position.

#### 2. WORK DESCRIPTION

Please briefly describe the nature of your (usual) work.

#### 3. WORKLOAD

With regard to your workload, do you regularly experience any of the following?

1. Quantitative overload i.e. too much to do
2. Quantitative underload i.e. too little to do
3. Qualitative overload i.e. work that is too difficult to do
4. Qualitative underload i.e. work that is too easy to do
5. Combination of the above

Where you have answered 'yes', please indicate the frequency, the work responsibilities/tasks particularly associated with this experience and the effects which this has upon you (i.e. how this makes you feel).

#### 4. WORK-RELATED SOURCES OF FRUSTRATION

Please briefly describe any common sources of frustration associated with your work (apart from those already mentioned in Question 3).

#### 5. OCCUPATIONAL SAFETY

1. Please list the health and safety hazards associated with your work and workplace.
2. Is there an occupational safety programme in your department?
3. Are you involved in the occupational safety programme for your section/unit? (Refers to formal safety programme only)
4. If yes, please describe your involvement.
5. Who is the safety representative for your department/section/unit?
6. Who would you call for cardiopulmonary resuscitation assistance in the event of someone collapsing in your work area/department?
7. Do you feel that the occupational safety programme for your department/section/unit is effective?

8. If 2, 3 or 4, please explain:
    - i. why you think it is ineffective
    - ii. how it could be improved
  9. Have you received an injury on duty (IOD) during the past 12 months?
  10. If 1, please state:
    - i. type of injury/ies
    - ii. site of injury/ies
    - iii. how the injury occurred
    - iv. how it/they could have been prevented
    - v. whether you reported the injury as an IOD
    - vi. if no or don't know, why you did not report it
    - vii. who you reported it to
    - viii. if yes, what happened as a result of your report
  11. Are you required by management to wear protective clothing whilst performing any aspect of your work?
  12. If yes, please state:
    - i. type of clothing in relation to the task performed
    - ii. whether you do wear it
    - iii. if 3 or 4, please give the reason/s for your answer
6. JOB INSECURITY
1. Do you worry that your job may be made redundant in view of the present financial situation of the University?
  2. If 2 or 3, please explain why you feel that your job or you are at risk of being made redundant/retrenched

#### IV. GENERAL HEALTH PROFILE

##### 1. PERCEPTIONS OF HEALTH

1. How would you define 'good health' in your own words?
2. How would you describe your own current state of health?
3. If you feel that your state of health could improve, please indicate:
  - i. how this could be achieved
  - ii. whether you could achieve it with the current resources and facilities available to you
  - iii. if no, what additional resources and facilities you would require

##### 2. PAST HISTORY OF ILL-HEALTH OR INJURY

1. Have you experienced any serious illness, injuries or undergone any operations?
2. If yes, please state:
  - i. what these were
  - ii. approximately when they occurred



3. Were you admitted to hospital in the past twelve months?
  4. If yes, for each admission, please state:
    - i. the reason for admission
    - ii. the month of admission
    - iii. the approximate length of hospital stay
    - iv. the approximate cost of the hospital stay (personal and medical aid)
  5. How many days of work have you missed due to illness this year?
  6. What was/were the predominant reason/s?
3. CURRENT HEALTH STATUS
1. Do you have any long-standing health problem or disability that you are aware of?
  2. If yes, please state what it is:
  3. Do you think your previous job might have contributed to the development of this problem?
  4. If yes, please state:
    - i. the nature of the work performed
    - ii. how it could have contributed to the health problem
  5. Do you think your present job might have contributed to the health problem?
  6. If yes, please state:
    - i. the nature of the work performed
    - ii. how it could have contributed to the health problem
  7. Did this health problem necessitate a change of occupation or type of work?
  8. Do you anticipate that it will affect your ability to work in the future (i.e. with the passage of time)?
  9. If yes, please describe how it could affect your ability to work?
  10. What medicines have you taken in the last two weeks (i.prescribed and by whom; ii.over-the-counter and by whom)?
  11. Who have you gone to for help when you have experienced a health problem in the last two years?
  12. How often have you gone to this person/these persons for help in the last three months?
  13. What was/were the health problem/s which you went to see them about?
  14. At the moment, are you regularly visiting a doctor or clinic for a health check-up (e.g. blood pressure)?

15. If yes, please state:
  - i. what you are checked for
  - ii. how often you are checked
  - iii. where you go for this check-up
  - iv. who performs the check-up (professional category only)
16. When was your blood pressure last checked by a doctor or professional nurse? (Month and year only)
17. When did you last have a pap smear (women only)? (Month and year only)
18. When did you last have your breasts checked for lumps by a doctor or professional nurse (women only)? (Month and year only)
19. In the past two weeks, were there any days on which you were unable to work due to a health problem?
20. If yes, please state:
  - i. what the problem was
  - ii. how many days you were unable to work
  - iii. who helped you to decide what to do about this problem
  - iv. whether you wished to consult a doctor
  - v. if yes, whether you did consult a doctor
  - vi. if no, why you did not consult a doctor

#### 4. USE OF THE HEALTH CARE SYSTEM: CONSULTATION OF DOCTORS

When you need to visit a doctor for a general health problem (ie. not a specific complaint for which you are already seeing a specialist):

1. Who do you usually consult (select from categories)?
2. Why do you consult this doctor?
3. Where do you have to go to see this doctor?
4. How long do you usually have to wait to go in once you have arrived there?
5. Is it usually convenient for you to visit this doctor?
6. If sometimes or no, please explain why it is inconvenient:
7. How much does it cost for a consultation (personal and medical aid cost)?
8. Are you usually satisfied with the outcome?
9. If no, please explain why you are dissatisfied:

#### 5. USE OF THE HEALTH CARE SYSTEM: CONSULTATIONS DURING WORKING HOURS

1. If you need to see a doctor during working hours is it usually easy?
2. If 2 or 3, please explain why:

## 6. USE OF HEALTH CARE SYSTEM: ANTENATAL CARE

To be answered by women who have been pregnant during the last two years, whilst employed at the University.

1. Did you receive regular antenatal care?
2. If no, please state why you did not:
3. If yes, please state:
  - i. who from (select from the categories provided)
  - ii. where you went for this care
  - iii. at what stage of your pregnancy you commenced antenatal care

## 7. USE OF HEALTH CARE SYSTEM: CAMPUS SERVICES

1. What health services exist on the campus which could be used by employees experiencing a health problem?
2. Do you use the clinic on the campus?
3. If no, why not?
4. If yes or sometimes, please state:
  - i. the nature of the complaint for which you last visited the clinic
  - ii. why you chose to use the clinic and not some other health care service
5. Do you feel that any additional health services for the staff should be provided on the campus?
6. If yes, please state:
  - i. what additional services
  - ii. why you feel that this would be of benefit

## V. HEALTH RISK PROFILE

(NB Age to be asked here)

- |                 |                   |
|-----------------|-------------------|
| 1. HEIGHT       | 4. PULSE          |
| 2. MASS         | 5. RESPIRATION    |
| 3. GRAVIDA/PARA | 6. BLOOD PRESSURE |
7. PERSONAL HEALTH RISKS

Have you experienced any of the following lately?

1. Obvious change in wart or mole (nature of change and duration)
2. Loss of weight (amount and duration)
3. Chronic fatigue (duration)
4. Persistent lack of sleep (duration, average number of hours of sleep and number of times of waking each night in the past month)
5. Persistent headaches (duration)
6. Nightsweats (duration)
7. Persistent pain (site and duration)
8. A sore that has taken longer than usual to heal (site and duration)

9. Unusual bleeding (site, amount and duration)
10. Unusual discharge (site, amount and duration)
11. Thickening or lump in breast or elsewhere (site, nature and duration)
12. Persistent difficulty in swallowing (duration)
13. Persistent indigestion (duration)
14. Persistent hoarseness of voice (duration)
15. Persistent cough (type and duration)
16. Persistent change in bladder habits (nature of change and duration)
17. Persistent change in bowel habits (nature of change and duration)
18. Persistent constipation (duration)
19. Persistent diarrhoea (duration)
20. Persistently heavy periods (average length of period and duration)
21. Persistent feelings of hopelessness or helplessness (duration)
22. Persistent depression (duration)

#### 8. SMOKING

1. Do you currently smoke cigarettes or a pipe?
2. If no, have you smoked previously?
3. If yes, please state:
  - i. approximately how many years you smoked for (include all periods of smoking if have previously stopped and resumed)
  - ii. when you stopped smoking
  - iii. what your average daily consumption was (before attempting to stop)
4. If you do smoke
  - i. approximately how many years have you smoked for (include all periods of smoking if you have previously stopped and then resumed)
  - ii. how many cigarettes or pipes do you smoke per day?

#### 9. ALCOHOL CONSUMPTION

1. Do you drink alcoholic beverages?
2. What type of alcoholic beverage do you usually drink?
3. How many glasses/bottles/cans of these do you drink in a week on average?

#### 10. LEISURE ACTIVITIES

1. Please provide details concerning your sport and non-sport leisure time activities (type and average amount of time spent per week/month on each one).

#### 11. EXERCISE

Please indicate the frequency of exercise obtained during an average week):

1. Occupational exercise

2. Recreational exercise

12. CAFFEINE INTAKE

1. Number of cups/cans of coffee (not de-caffeinated)/tea/cocoa/cola per day:

13. SLEEP

1. Please state the average number of hours sleep obtained each night.

14. PERCEPTION OF HEALTH RISK

1. Taking account of your family history, life-style, past and current health status, do you think that you are at risk of developing any serious health problem in the future?
2. If yes, please state:
  - i. the type of health problem/s
  - ii. whether you think that any action can be taken to prevent the development of the health problem/s
  - iii. if yes, what action could be taken
  - iv. whether you would be prepared to take this action
  - v. if no or do not know, please explain why you feel this way.

Annexure 7: Interview response sheet used for the field test

ASSESSMENT OF THE AGGREGATE HEALTH STATUS OF UNIVERSITY OF XXXXX  
EMPLOYEES

INTERVIEW RESPONSE SHEET (2)

I. BIOGRAPHIC AND DEMOGRAPHIC DATA

1. GENDER:
2. ETHNIC GROUP:
3. RANK/OCCUPATIONAL CATEGORY:
4. APPOINTMENT:            FT/PT    Perm/Temp    Academic/Non-academic
5. DEPARTMENT:
6. MEMBERSHIP OF EMPLOYEE REPRESENTATIVE ORGANISATION:
7. NUMBER OF WIVES:
8. AGE:    (To be asked when dealing with Section V)
- |                 |                      |                |                      |
|-----------------|----------------------|----------------|----------------------|
| 1. less than 18 | <input type="text"/> | 5. 45 - 54     | <input type="text"/> |
| 2. 18 - 24      | <input type="text"/> | 6. 55 - 64     | <input type="text"/> |
| 3. 25 - 34      | <input type="text"/> | 7. 65 and over | <input type="text"/> |
| 4. 35 - 44      | <input type="text"/> |                |                      |

II. NON-OCCUPATIONAL DATA

1. DESCRIPTION OF LIVING QUARTERS:

1. Kind of living quarters:
- |                                |                      |                      |                      |
|--------------------------------|----------------------|----------------------|----------------------|
| 1. whole detached house        | <input type="text"/> | 5. residential hotel | <input type="text"/> |
| 2. semi-detached/cluster house | <input type="text"/> | 6. outhouse/garage   | <input type="text"/> |
| 3. flat                        | <input type="text"/> | 7. shack/hut         | <input type="text"/> |
| 4. rented room in a house      | <input type="text"/> | 8. hostel            | <input type="text"/> |
2. Ownership basis:
- |                           |                      |                     |
|---------------------------|----------------------|---------------------|
| 1. owned (fully paid)     | <input type="text"/> | 4. other (specify): |
| 2. owned (partially paid) | <input type="text"/> |                     |
| 3. rented                 | <input type="text"/> |                     |
3. Dwelling construction:
1. floor:
2. walls:
3. roof:
4. Number of rooms:



5. Household composition:

No.	Relationship to informant	Gender	Age
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
13.			
14.			
15.			

6. Water supply:

1. river/stream/dam/spring

2. private well/borehole/resevoir

3. community well/borehole

4. community tap/tanker

5. untreated water piped to dwelling

6. piped to dwelling from communal purification plant

7. other

7. Sewage disposal:

1. no toilet (ie. open ground, river or stream used)

2. private pit privy system

3. community pit privy system

4. pail system

5. conservancy tank

6. chemical toilet

7. septic tank and french drain

8. waterborne sewage disposal system

9. other

8. Refuse disposal:

1. none (ie open ground, river or stream)

2. burial in a pit

3. incineration

4. community refuse collection system

5. other

## 9. Energy supply:

	Type	Purpose		
		Heating	Cooking	Lighting
1.	solar			
2.	electricity			
3.	gas			
4.	battery			
5.	paraffin			
6.	oil			
7.	coal/anthracite/charcoal			
8.	wood			
9.	dung pats			
10.	candle			
11.	other			

## 10. Main meal and food storage:

i. when cooked:

ii. by whom:

iii. food storage facilities:

## 11. Laundry:

	Where	By whom
i. clothes washed		
ii. clothes dried		

## III. OCCUPATIONALLY ASSOCIATED DATA

## 1. OCCUPATIONAL HISTORY

No.	Type of organisation	Department	Position held	Period in this position
1.				
2.				
3.				
4.				
5.				
6.				
7.				
8.				
9.				
10.				

2. WORK DESCRIPTION:

3. WORKLOAD:

No.	Yes/sometimes no/don't know	Frequency	Associated work responsibilities	Effects
1.				
2.				
3.				
4.				
5.				

4. WORK-RELATED SOURCES OF STRESS:

5. OCCUPATIONAL SAFETY:

1. Health and safety hazards:

i. physical:

ii. chemical:

iii. biological:

iv. mechanical/ergonomic:

v. psychological:

vi. social:

2. Knowledge of safety programme:

1. yes

2. no

3. don't know

3. Involved in safety programme:

1. yes

2. no

3. don't know

4. Involvement in safety programme:
5. Safety representative:
6. CPR assistance:
7. Effectiveness of occupational safety programme:
  1. yes
  2. partially/sometimes
  3. no
  4. don't know
8. Effectiveness of occupational safety programme:
  - i. reasons for ineffectiveness:
  - ii. methods of improvement;
9. IOD:
  1. yes
  2. no
10. IOD data
  - i. type/s:
  - ii. site/s:
  - iii. how injury occurred:
  - iv. how it/they could have been prevented:
  - v. whether reported:
    1. yes
    2. no
    3. don't know
  - vi. why not reported:
  - vii. person reported to:
  - viii. results of report:
11. Protective clothing:
  1. yes
  2. no
  3. don't know

## 12. Protective clothing:

## i. type:

## ii. whether worn:

1. yes, always
2. usually
3. sometimes
4. not at all

## iii. reasons:

## 6. JOB INSECURITY:

## 1. Worries of job redundancy:

1. not usually
2. sometimes
3. yes, often

## 2. Reasons for worrying:

## IV. GENERAL HEALTH PROFILE

## 1. PERCEPTIONS OF HEALTH:

## 1. Definition of good health:

1. clinical
2. role performance
3. adaptive
4. actualisation
5. adaptive and actualisation
6. other

## 2. Current state of health:

## 3. Improvement of health status;

## i. ways of improvement:

## ii. adequacy of current resources and facilities:

1. yes
2. no
3. don't know
4. not applicable

## iii.

## 2. PAST HISTORY OF HEALTH:

## 1. History of illness or injury:

1. yes
2. no

2.	i. nature of illness or injury	ii. date

## 3. Hospital admissions:

1. yes
2. no

## 4. Details of hospital admissions:

No.	i. Reason	ii. Date	iii. Length of stay	iv. Cost of admission	
				Personal	Medical aid
1.					
2.					
3.					
4.					
5.					

## 5. Days of work missed due to illness:

## 6. Predominant reasons:

## 3. CURRENT HEALTH STATUS:

## 1. Current long-standing health problem:

1. yes
2. no

## 2. Nature of health problem:

## 3. Contribution of previous job:

1. yes
2. no
3. don't know
4. not applicable

## 4. Contribution of previous job:

## i. nature of work:

## ii. how it contributed to health problem:

## 5. Contribution of present job:

1. yes
2. no
3. don't know
4. not applicable

6. Contribution of present job:
- i. nature of work:
  - ii. how it could have contributed:
7. Change of work necessitated:
1. yes
  2. no
  3. not applicable
8. Future effect on work:
1. yes
  2. no
  3. don't know
  4. not applicable
9. Possible effect on ability to work:
10. Medicines taken in last two weeks:

i. Prescribed		ii. Over-the-counter	
Name	By whom	Name	By whom

(Prescribed/suggested by whom:

1. general practitioner in private practice
  2. doctor at provincial/state hospital/OPD/clinic
  3. specialist in private practice
  4. pharmacist
  5. other - please state whom
11. Help when not well:
12. How often in the last three months:
13. Nature of problems:
14. Regular visits to the doctor:
1. yes
  2. no



No.	i. Nature of problem	ii. Frequency	iii. Where	iv. By whom
1.				
2.				
3.				
4.				

16. BP:

17. Pap smear:

18. Breast check:

19. Health problem/s in the past two weeks:

1. yes
2. no

20. Details of health problem:

i. nature of health problem/s:

ii. number of days away from work:

iii. assistance with decision to seek help:

iv. desire to consult a doctor:

1. yes
2. no
3. not applicable

v. doctor actually consulted:

1. yes
2. no
3. not applicable

vi. reason/s for not consulting doctor (more than one may be selected):

1. insufficient time - too busy at work
2. insufficient time - takes too long to wait to see doctor
3. too much effort
4. costs too much to get to doctor
5. costs too much to see doctor
6. other - please specify:
7. not applicable

## 4. USE OF HEALTH CARE SERVICES: CONSULTATION OF DOCTORS:

1. Doctor usually consulted:

1. doctor at work clinic
2. doctor at provincial/state clinic/PHC centre
3. doctor at provincial/state hospital
4. general practitioner in private practice
5. specialist in private practice (state specialty)
6. other - please specify:

(More than one may be selected, but specify nature of problem for each.)

2. Reason/s for consulting this/these doctor/s:

3. Location of doctor/s:
  4. Length of wait:
  5. Convenience:
    1. yes
    2. sometimes
    3. no
  6. Reason/s for inconvenience:
  7. Cost:
    - i. personal:
    - ii. medical aid:
  8. Satisfaction:
    1. yes
    2. no
  9. Reason/s for dissatisfaction:
5. USE OF THE HEALTH CARE SYSTEM: CONSULTATIONS DURING WORKING HOURS:
1. Ease in consulting a doctor during working hours:
    1. yes, usually
    2. sometimes
    3. not usually
  2. Reason/s for difficulties:
6. USE OF HEALTH CARE SYSTEM: ANTENATAL CARE:
1. Regular antenatal care:
    1. yes
    2. no
  2. Reason/s for not receiving regular antenatal care:
    1. unable to take time off work
    2. cost too much for transport
    3. cost too much for antenatal visits
    4. did not feel antenatal care was important
    5. available antenatal care facilities were unsuitable or unattractive - please specify:
    6. transport difficulties - please specify reason:
    7. other - please specify:
  3. Provision of antenatal care:
    - i. provided by:
      1. private midwife
      2. local community clinic ie professional CHN
      3. provincial/state hospital/clinic
      4. private general practitioner
      5. private obstetrician
      6. other - please specify:

ii. location:

iii. stage of commencement:

7. USE OF HEALTH CARE SYSTEM: CAMPUS SERVICES:

1. Services available:

2. Use of campus clinic:

1. yes, often
2. sometimes
3. no, not usually

3. Reason/s for not using campus clinic:

4. Use of campus clinic:

i. nature of complaint:

ii. reason/s for choosing campus clinic:

5. Need for additional services on campus:

1. yes
2. no
3. don't know

6. Additional services:

i. type of services:

ii. potential benefit/s:

V. HEALTH RISK PROFILE:

1. HEIGHT:

4. PULSE:

2. MASS:

5. RESPIRATION:

3. GRAVIDA/PARA:

6. BLOOD PRESSURE:

7. PERSONAL HEALTH RISKS:

No.	Site	Change	Type	Amount	Duration	Other
1.						
2.						
3.						
4.						
5.						
6.						
7.						
8.						
9.						
10.						
11.						
12.						
13.						
14.						

15.						
16.						
17.						
18.						
19.						
20.						
21.						
22.						

8. SMOKING:

1. Currently smoking:

1. yes

2. no
2. Previously smoked:

1. yes

2. no
3. Previous smoking history:

i. number of years:

ii. date of ceasing smoking (month and year):

iii. average daily consumption:

1. less than 10

2. 10 - 19

3. 20 - 29

4. 30 - 39

5. 40 or more
4. Present smoking history:

i. number of years:

ii. average daily consumption:

1. less than 10

2. 10 - 19

3. 20 - 29

4. 30 - 39

5. 40 or more

9. ALCOHOL CONSUMPTION:

1. Alcoholic beverages consumed:

1. yes

2. no

2. Type	3. Amount
1. beer	
2. wine	
3. spirits	
4. other:	

10. LEISURE ACTIVITIES:

1. Details of leisure time activities:

No.	Type	Frequency		Average time spent	
		per week	per month	weekly	monthly

## 11. EXERCISE:

1. Occupational exercise:
  1. sedentary occupation
  2. minimal occupational exertion
  3. moderate occupational exertion, no sweating
  4. moderate occupational exertion to the point of sweating
  5. intensive occupational exertion with sweating for  
at least 30 minutes
2. Non-occupational exercise:
  1. no non-occupational exercise
  2. minimal non-occupational exertion
  3. moderate non-occupational exertion, no sweating
  4. moderate non-occupational exertion to the point of  
sweating
  5. intensive non-occupational exertion with sweating for  
at least 30 minutes

## 12. CAFFEINE INTAKE:

Number of cups/cans/ glasses per day	Coffee	Tea	Cocoa	Carbonated beverages (state type)

## 13. SLEEP:

1. Number of hours sleep per night:
  1. less than 4 hours
  2. 4 - 4.99 hours
  3. 5 - 5.99 hours
  4. 6 - 6.99 hours
  5. 7 - 7.99 hours
  6. more than 8 hours

## 14. PERCEPTION OF HEALTH RISK:

1. Perception of health risk:
  1. yes
  2. no
  3. don't know
2. Details of perceived health risk:
  - i. type of health problem/s:
  - ii. possibility of health action:
    1. yes
    2. no
    3. don't know
    4. not applicable
  - iii. type of action:

iv. prepared to take action:

1. yes
2. no
3. don't know
4. not applicable

v. reasons for not being prepared to take action:

Annexure 8: Revised questionnaire

ASSESSMENT OF THE AGGREGATE HEALTH STATUS OF XXXXXXXXXXXXXXXXXXXX  
EMPLOYEES

RESPONDENT'S NUMBER:

QUESTIONNAIRE (1)

Please place a X in the appropriate box, where applicable.  
Note: "The organisation" means the organisation you work for,  
and indicates all the people who work there.

I. BIOGRAPHIC AND DEMOGRAPHIC DATA

1. MARITAL STATUS

- 1. single
- 2. single but promised or engaged, and not living together
- 3. common law marriage/permanent relationship/promised or engaged and living together
- 4. married and living together
- 5. married but separated
- 6. divorced
- 7. widowed


2. NUMBER OF CHILDREN

How many children do you have?

(Please include step-children, adopted children and grown-up children)

3. FINANCIAL DEPENDENTS

Please supply the following information about people who depend on you  
for financial support:

NO.	AGE	GENDER	RELATIONSHIP*	DEGREE OF DEPENDENCY+
1.				
2.				
3.				
4.				
5.				
6.				
7.				
8.				
9.				
10.				

\*Relationship means family member (e.g. mother, daughter), friend, etc.  
+Degree of dependency means sole or partial support towards a person's  
living costs.



## II. NON-OCCUPATIONAL DATA

## 1. RESIDENTIAL AREA

1. Please state where you live during your working week (suburb, not street name or number - e.g. Umbilo, Umlazi, etc.):
  
  
  
  
  
  
  
2. If you have to live away from your close family (e.g. spouse/partner and young children) in order to work, please state the area where they live:

## 2. TRANSPORT

1. How do you usually get to work? (You may put a X against more than one method)

- |  |                          |                      |                          |
|--|--------------------------|----------------------|--------------------------|
| 1. on foot   | <input type="checkbox"/> | 5. private lift club | <input type="checkbox"/> |
| 2. bicycle   | <input type="checkbox"/> | 6. taxi/minibus      | <input type="checkbox"/> |
| 3. motorcycle/moped/scooter  | <input type="checkbox"/> | 7. bus               | <input type="checkbox"/> |
| 4. own motor vehicle (no regular passenger who contributes to costs) | <input type="checkbox"/> | 8. train             | <input type="checkbox"/> |
|  |                          | 9. other             | <input type="checkbox"/> |

2. Approximately how long does it usually take you to travel to work (including time spent waiting for transport)?

1. 0 - 29 minutes	2. 30 - 59 minutes	3. 60 - 89 minutes	4. 90 - 119 minutes	5. 120+ minutes
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

3. Approximately how much money do you spend on transport to and from work each day?

If you are in a private lift club, please state how much it costs you to travel to and from work each week:

If you use your own vehicle and do not know how much it costs you, please state

- i. the type of vehicle:
- ii. the engine capacity:
- iii. distance from home to work in kilometres:

## III. OCCUPATIONALLY ASSOCIATED DATA

## 1. EDUCATIONAL STATUS

What standard have you completed and passed?

- |                    |                          |                             |                          |
|--------------------|--------------------------|-----------------------------|--------------------------|
| 1. less than std 1 | <input type="checkbox"/> | 8. std 7                    | <input type="checkbox"/> |
| 2. std 1           | <input type="checkbox"/> | 9. std 8                    | <input type="checkbox"/> |
| 3. std 2           | <input type="checkbox"/> | 10. std 9                   | <input type="checkbox"/> |
| 4. std 3           | <input type="checkbox"/> | 11. std 10                  | <input type="checkbox"/> |
| 5. std 4           | <input type="checkbox"/> | 12. post-matric certificate | <input type="checkbox"/> |
| 6. std 5           | <input type="checkbox"/> | or diploma                  | <input type="checkbox"/> |
| 7. std 6           | <input type="checkbox"/> | 13. university degree       | <input type="checkbox"/> |

## 2. HOURS OF WORK FOR THE ORGANISATION

1. Please state the usual number of hours worked weekly (not peak periods) for the organisation:

- i. at the workplace:
- ii. at home:
- iii. in total:

2. During non-peak periods, do you usually work:

- i. fixed hours:
- ii. flexi-time, complete period at the workplace:
- iii. flexi-time, part of the period at home:
- iv. shiftwork:

3. Do you experience peaks in your workload?

(This peak refers to times when you are much more busy than usual.)

1. yes, regularly	2. occasionally	3. not at all

4. If yes, please state:

- i. when these peaks occur (eg. at the end of the every month):
- ii. how long the peak usually lasts:
- iii. usual daily number of hours worked during this period:

5. How supportive is your spouse/partner of your workload usually?

1. supportive and tolerant	2. tolerant but not supportive	3. intolerant

6. Please give examples of his/her behaviour to explain your answer to question 5 (e.g. helps with household chores):

## 3. SOCIAL COHESION WITHIN THE ORGANISATION

1. Have you experienced any personal problems which have caused you great worry, unhappiness or bother whilst working in this job?

1. yes	2. no

2. If yes, please state (where applicable) whether you feel you have been given enough support from:

	yes, usually	sometimes	not usually
i. colleagues in your section/unit			
ii. the head of your section/unit			
iii. the head of your department			
iv. Personnel Department			
v. family			
vi. friends outside the workplace			
vii. others (please specify)			

3. Have you experienced any work-related problems which have caused you great worry, unhappiness or bother whilst working in this job?

1. yes	2. no

4. If yes, please state (where applicable) whether you feel you have been given enough help from:

	yes, usually	sometimes	not usually
i. colleagues in your section/unit			
ii. the head of your section/unit			
iii. the head of your department			
iv. your staff association or trade union			
v. others (please specify)			

5. Do you feel that the different sections/units/departments in the organisation co-operate with each other to improve its functioning?

1. yes, usually	2. sometimes	3. not usually	4. do not know

6. If 2 or 3, please explain why you feel this way:

#### 4. WORK CONTRIBUTION TO THE ORGANISATION

1. Do you feel that your work contribution is valued by the person immediately in charge of you?

1. yes, usually	2. sometimes	3. not usually	4. do not know

2. Please explain why you feel this way:

3. Is there any other way in which you feel your work effort could be rewarded, other than by increasing your salary/wage?

1. yes	2. no	3. don't know

4. If yes, please describe in what way/s:

5. ADDITIONAL WORK

1. Do you take on other work, besides that which you perform for the organisation, to increase your earnings?

1. yes, regularly	2. sometimes	3. no, not at all

2. If 1 or 2, please state:

i. type of work performed:

ii. frequency - average number of times per:

1. day	2. week	3. month	4. year

iii. whether you could meet your basic living costs without this additional income:

1. yes, usually	2. sometimes	3. not usually

iv. how this additional income is generally used (e.g. to help with basic living costs, education for children, holidays:

6. WORK SATISFACTION

1. Please indicate how much work satisfaction or enjoyment you derive from your work:

1. relatively high satisfaction  
2. some dissatisfaction to moderately high satisfaction  
3. dissatisfaction to moderate satisfaction  
4. usually dissatisfied


(Likert,R., 1967, p. 200)

2. If 3 or 4, please give reasons for your answer:

3. Do you feel that you have enough authority to carry out your work satisfactorily?  
(Authority refers to the power given to you in your job description or delegated to you by your superior, so that other people will follow your instructions.)

1. yes, usually	2. sometimes	3. not usually	4. do not know

4. If 2, 3 or 4, please explain why you feel this way:

5. Do you feel that you are given enough responsibility with regard to carrying out your work?

(This means the duties and tasks that you are expected to carry out according to your job description or by your superior.)

1. yes usually	2. sometimes	3. not usually	4. do not know

6. If 2, 3 or 4, please explain why you feel this way:

7. To what extent are you involved in decision-making in relation to your work?

1. fully involved in all decisions related to your work
2. usually consulted but not usually involved in decision-making
3. never involved in decisions, occasionally consulted
4. not at all


(Likert, R., 1967, p. 207)

#### 7. COMMUNICATION

1. Please indicate the extent to which information that is necessary to you for the performance of your work, is shared by your superior (person immediately in charge of you):

1. superior tries to give subordinate all relevant information and all information requested
2. superior gives subordinates information needed and answers most of subordinate's queries
3. superior gives only the information the superior feels is needed
4. superior provides minimum of information for the subordinate

(Adapted from Likert, R., 1967, p. 201)

2. How often do you receive conflicting instructions from your superior?

1. very frequently	2. frequently	3. sometimes	4. rarely

3. How frequently does your superior change the instructions which he/she has given to you?

1. very frequently	2. frequently	3. sometimes	4. rarely

## 8. JOB RATING SYSTEM (If applicable)

1. Are you satisfied with the current method of job rating being used by the organisation?

1. yes	2. no	3. do not know

2. If 2 or 3, please give reasons for your answer:

## 9. PROMOTION SYSTEM

1. Are you satisfied with the current promotion system regarding promotion of employees within your department/section/unit?

1. yes	2. no	3. do not know

2. Please give reasons for your answer:

3. Do you anticipate that you will be promoted under this system?

1. yes	2. no	3. do not know

4. If 2 or 3, please explain why you feel this:

5. Do you wish to be promoted?

1. yes	2. no	3. do not know/not sure

6. Please explain why you feel like this:

## 10. VACATION LEAVE

1. How many days vacation leave do you still have for this year?  
(An approximate number is adequate)

i. compulsory:                      ii. cumulative:

2. How often are you able to take vacation leave when it would best suit you from a personal point of view? (This refers to requests for 5 or more days leave only)

1. very frequently	2. frequently	3. sometimes	4. rarely

3. If 3 or 4, please state the reasons for not being able to do so:

## 11. CHILD CARE

1. If you are a working mother, have you been able to make adequate arrangements for the care of your child/children while you are at work?

1. yes	2. no

2. If 2, please describe the problems you have had:

## 12. EMPLOYEE FACILITIES

1. How would you rate the facilities at work for employees (eg. toilets, public telephones, etc)?

1. very good	2. good	3. fair	4. poor	5. very poor

2. If 3, 4 or 5, please explain why you feel this and indicate what additional facilities are needed:

## 13. MEDICAL AID SCHEME

1. Do you belong to a medical aid scheme?

1. yes	2. no

2. If yes, what is the name of the scheme?

3. If yes, are you satisfied with the scheme?

1. yes, usually	2. sometimes	3. not usually

4. If 2 or 3, please explain why you feel this way:

## IV. GENERAL HEALTH PROFILE

## 1. HEALTH PROMOTION

1. Would you like to learn more about how to promote or protect your health?

1. yes	2. no	3. do not know

2. If no, please explain why you feel this:



3. If yes, please state what you would like to learn more about:

4. If a health promotion programme, which had been planned with employees according to their needs, was offered at work would you participate in it?

1. yes	2. no	3. do not know

5. If no or do not know, please state the reason for your answer:

6. If yes, please put a cross next to any of the following aspects which would be useful/interesting to you:

- i. evaluation and monitoring of work environment to promote a healthy work environment
- ii. physical fitness and exercise programme
- iii. nutrition
- iv. weight control
- v. how to stop smoking
- vi. communication skills
- vii. leadership skills
- viii. stress management
- ix. management and prevention of depression and suicide
- x. alcohol and substance abuse prevention and control
- xi. accident prevention
- xii. first aid
- xiii. prenatal and postnatal health care
- xiv. pre-retirement preparation
- xv. back care
- xvi. cardio-pulmonary fitness (to prevent heart and circulatory disease)
- xvii. cardio-pulmonary resuscitation
- xviii. hypertension (high blood pressure) screening and management
- xix. AIDS
- xx. family planning or spacing

Thank you for your assistance.

## Annexure 9: Revised interview schedule

ASSESSMENT OF THE AGGREGATE HEALTH STATUS OF XXXXXXXXXXXXXXXXXXXXXXXX  
EMPLOYEES

## INTERVIEW SCHEDULE (2)

## I. BIOGRAPHIC AND DEMOGRAPHIC DATA

1. GENDER
2. ETHNIC GROUP
3. RANK/OCCUPATIONAL CATEGORY
4. APPOINTMENT
5. DEPARTMENT
6. MEMBERSHIP OF EMPLOYEE REPRESENTATIVE ORGANISATION
7. RELIGION

1. What religion do you belong to?

2. Do you practice this religion?

## 8. AGE

## II. NON-OCCUPATIONAL DATA

## 1. DESCRIPTION OF LIVING QUARTERS

1. What kind of dwelling do you live in?

2. Do you own or rent this dwelling?

3. What is the dwelling constructed from?

4. How many rooms does the house have?

5. Please indicate household composition: relationship to respondent/gender/age.  
(Exclude people who are visiting for less than one month.)  
(If in a hotel or hostel, give details of respondent's room occupancy.)

6. Please indicate the water supply for the dwelling.

7. Please indicate the method of sewage disposal for the dwelling.

8. Please indicate the method of refuse disposal utilised by the occupants.

9. Please indicate the type/s of energy supply for the dwelling.  
(If more than one type is used, please state the purpose/s for each one.)

10. If you live in a hostel or rented room, please describe how you usually obtain your main meal of the day (i.e. when it is cooked, by whom, and food storage facilities.)
11. If you live in a hostel or rented room, please describe how you usually get your laundry done (i.e. washing and drying facilities/by whom).

### III. OCCUPATIONALLY ASSOCIATED DATA

#### 1. OCCUPATIONAL HISTORY

Please give details of your previous work positions (jobs): type of organisation/department/position held/period in this position.

#### 2. WORK DESCRIPTION

Please briefly describe the nature of your (usual) work.

#### 3. WORKLOAD

With regard to your workload, do you regularly experience any of the following?

1. Quantitative overload i.e. too much to do
2. Quantitative underload i.e. too little to do
3. Qualitative overload i.e. work that is too difficult to do
4. Qualitative underload i.e. work that is too easy to do
5. Combination of the above

Where you have answered 'yes', please indicate the frequency, the work responsibilities/tasks particularly associated with this experience and the effects which this has upon you (i.e. how this makes you feel).

#### 4. WORK-RELATED SOURCES OF FRUSTRATION

Please briefly describe any common sources of frustration associated with your work (apart from those already mentioned in Question 3).

#### 5. OCCUPATIONAL SAFETY

1. Please list the health and safety hazards associated with your work and workplace.
2. Are you ever moved to a different job to give you a change from your current type of work?
3. If 1, 2 or 3, please state:
  - i. what type of work you are given
  - ii. reason for being given the change
  - iii. who moves you (designation only)
4. Is there an occupational safety programme in your department?
5. Are you involved in the occupational safety programme for your section/unit? (Refers to formal safety programme only)

6. If yes, please describe your involvement.
  7. Who is the safety representative for your department/section/unit?
  8. Who would you call for cardiopulmonary resuscitation assistance in the event of someone collapsing in your work area/department?
  9. (Interviewer to evaluate availability of CPR assistance in relation to proximity and time to reach respondent's workplace)
  10. Do you feel that the occupational safety programme for your department/section/unit is effective?
  11. If 2, 3 or 4, please explain:
    - i. why you think it is ineffective
    - ii. how it could be improved
  12. Have you received an injury whilst carrying out work for the organisation (IOD) during the past 12 months?
  13. If 1, please state:
    - i. type of injury/ies
    - ii. site of injury/ies
    - iii. how it/they injury occurred
    - iv. how it/they could have been prevented
    - v. whether you reported it/them as an IOD
    - vi. if no or don't know, why you did not report it/them
    - vii. who you reported it/them to
    - viii. if yes, what happened as a result of your report
    - ix. who treated it/them?
    - x. how many days work you missed as a result of it/them
  14. Are you required by management to wear protective clothing whilst performing any aspect of your work?
  15. If yes, please state:
    - i. type of clothing in relation to the task performed
    - ii. whether you do wear it
    - iii. if 3 or 4, please give the reason/s for your answer
6. JOB INSECURITY
1. Do you worry that you may be retrenched or lose your job?
  2. If 2 or 3, please explain why you feel this way?
7. EMPLOYEE REPRESENTATIVE ORGANISATION
1. Do you feel that the employee representative organisation you belong to, gives you enough support in the workplace?
  2. If 2 or 3, please explain why you feel this way:
- IV. GENERAL HEALTH PROFILE
1. PERCEPTIONS OF HEALTH

1. How would you define 'good health' in your own words?
  2. How would you describe your own current state of health?
  3. If you feel that your state of health could improve, please indicate:
    - i. how this could be achieved
    - ii. whether you could achieve it with the current resources and facilities available to you
    - iii. if no, what additional resources and facilities you would require
2. PAST HISTORY OF ILL-HEALTH OR INJURY
1. Have you experienced any serious illness, injuries or undergone any operations?
  2. If yes, please state:
    - i. what these were
    - ii. approximately when they occurred
  3. Were you admitted to hospital in the past twelve months?
  4. If yes, for each admission, please state:
    - i. the reason for admission
    - ii. the month of admission
    - iii. the approximate length of hospital stay
    - iv. the approximate cost of the hospital stay (personal and medical aid)
  5. How many days of work have you missed due to illness this year?
  6. What was/were the predominant reason/s?
3. CURRENT HEALTH STATUS
1. Do you have any long-standing health problem or disability that you are aware of?
  2. If yes, please state what it is:
  3. Do you think your previous job might have contributed to the development of this problem?
  4. If yes, please state:
    - i. the nature of the work performed
    - ii. how it could have contributed to the health problem
  5. Do you think your present job might have contributed to the health problem?
  6. If yes, please state:
    - i. the nature of the work performed
    - ii. how it could have contributed to the health problem
  7. Did this health problem necessitate a change of occupation or type of work?

8. Do you anticipate that it will affect your ability to work in the future (as time goes by)?
  9. If yes, please describe how it could affect your ability to work?
  10. What medicines have you taken in the last two weeks (i.prescribed and by whom; ii.over-the-counter and by whom)?
  11. Who have you gone to for help when you have experienced a health problem in the last two years?
  12. How often have you gone to this person/these persons for help in the last three months?
  13. What was/were the health problem/s which you went to see them about?
  14. At the moment, are you regularly visiting a doctor or clinic for a health check-up (e.g. blood pressure)?
  15. If yes, please state:
    - i. what you are checked for
    - ii. how often you are checked
    - iii. where you go for this check-up
    - iv. who performs the check-up (professional category only)
  16. When was your blood pressure last checked by a doctor or professional nurse? (Month and year only)
  17. When did you last have a pap smear (women only)? (Month and year only)
  18. When did you last have your breasts checked for lumps by a doctor or professional nurse (women only)? (Month and year only)
  19. Have you experienced a health problem in the past two weeks?
  20. If yes, please state:
    - i. what the problem was
    - ii. how many days you were unable to work
    - iii. who helped you to decide what to do about this problem
    - iv. whether you wished to consult a doctor
    - v. if yes, whether you did consult a doctor
    - vi. if no, why you did not consult a doctor
4. USE OF THE HEALTH CARE SYSTEM: CONSULTATION OF DOCTORS
- When you need to visit a doctor for a general health problem (ie. not a specific complaint for which you are already seeing a specialist):
1. Who do you usually consult (select from categories)?
  2. Why do you consult this doctor?
  3. Where do you have to go to see this doctor?
  4. How long do you usually have to wait to go in once you have

arrived there?

5. Is it usually convenient for you to visit this doctor?
6. If sometimes or no, please explain why it is inconvenient:
7. How much does it cost for a consultation (personal and medical aid cost)?
8. Are you usually satisfied with the outcome?
9. If no, please explain why you are dissatisfied:

5. USE OF THE HEALTH CARE SYSTEM: CONSULTATIONS DURING WORKING HOURS

1. If you need to see a doctor or health professional during working hours is it usually easy?
2. If 2 or 3, please explain why:

6. USE OF HEALTH CARE SYSTEM: ANTENATAL CARE

To be answered by women who have been pregnant during the last two years, whilst employed in the organisation

1. Did you receive regular antenatal care?
2. If no, please state why you did not:
3. If yes, please state:
  - i. who from (select from the categories provided)
  - ii. where you went for this care
  - iii. at what stage of your pregnancy you commenced antenatal care

7. USE OF HEALTH CARE SYSTEM: HEALTH SERVICES PROVIDED BY THE ORGANISATION

1. What health services exist in the workplace, that could be used by employees experiencing a health problem?
2. If there is a clinic in the workplace, do you use it?
3. If no, why not?
4. If yes or sometimes, please state:
  - i. the nature of the complaint for which you last visited the workplace clinic
  - ii. why you chose to use the workplace clinic and not some other health care service
5. Do you feel that any additional health services should be provided in the workplace for the employees?
6. If yes, please state:
  - i. what additional services
  - ii. why you feel that this would be of benefit



## 8. CONSISTENCY OF CARE

(To be evaluated by the interviewer, according to responses for the use of health care practitioners. Consistency means the consistent use of one doctor or general practitioner's practice, or health service over a period of at least two years, so that records are built up for that individual.)

## V. HEALTH RISK PROFILE

(NB Age to be asked here)

- |                          |                   |
|--------------------------|-------------------|
| 1. HEIGHT                | 4. PULSE          |
| 2. MASS                  | 5. RESPIRATION    |
| 3. GRAVIDA/PARA          | 6. BLOOD PRESSURE |
| 7. URINALYSIS            |                   |
| 8. PERSONAL HEALTH RISKS |                   |

Have you experienced any of the following lately?

1. Obvious change in wart or mole (nature of change and duration)
2. Loss of weight (amount and duration)
3. Chronic fatigue (duration)
4. Persistent lack of sleep (duration, average number of hours of sleep and number of times of waking each night in the past month)
5. Persistent headaches (duration)
6. Nightsweats (duration)
7. Persistent pain (site and duration)
8. A sore that has taken longer than usual to heal (site and duration)
9. Unusual bleeding (site, amount and duration)
10. Unusual discharge (site, amount and duration)
11. Thickening or lump in breast or elsewhere (site, nature and duration)
12. Persistent difficulty in swallowing (duration)
13. Persistent indigestion (duration)
14. Persistent hoarseness of voice (duration)
15. Persistent cough (type and duration)
16. Persistent change in bladder habits (nature of change and duration)
17. Persistent change in bowel habits (nature of change and duration)
18. Persistent constipation (duration)
19. Persistent diarrhoea (duration)
20. Persistently heavy periods (average length of period and duration)
21. Persistent feelings of hopelessness or helplessness (duration)
22. Persistent depression (duration)

## 9. SMOKING

1. Do you currently smoke cigarettes or a pipe?
2. If no, have you smoked previously?
3. If yes, please state:

- i. approximately how many years you smoked for (include all periods of smoking if have previously stopped and resumed)
- ii. when you stopped smoking
- iii. what your usual daily consumption was (before attempting to stop)

4. If you do smoke

- i. approximately how many years have you smoked for (include all periods of smoking if you have previously stopped and then resumed)
- ii. how many cigarettes or pipes do you usually smoke per day?

10. ALCOHOL CONSUMPTION

- 1. Do you drink alcoholic beverages?
- 2. What type of alcoholic beverage do you usually drink?
- 3. How many glasses/bottles/cans of these do you usually drink in a week?

11. LEISURE ACTIVITIES

- 1. Please provide details concerning your sport and non-sport leisure time activities (type and average amount of time spent per week/month on each one).

12. EXERCISE

Please indicate the frequency of exercise usually obtained during one average week):

- 1. Occupational exercise
- 2. Non-occupational exercise

13. CAFFEINE INTAKE

- 1. Usual number of cups/cans of coffee (not de-caFFEinated)/tea/cocoa/cola per day:

14. SLEEP

- 1. Please state the usual number of hours sleep obtained each night.

15. PERCEPTION OF HEALTH RISK

- 1. Taking account of your family history, life-style, past and current health status, do you think that you are at risk of developing any serious health problem in the future?
- 2. If yes, please state:
  - i. the type of health problem/s
  - ii. whether you think that any action can be taken to prevent the development of the health problem/s
  - iii. if yes, what action could be taken
  - iv. whether you would be prepared to take this action

v. if no or do not know, please explain why you feel this way.

## Annexure 10: Revised interview response sheet

ASSESSMENT OF THE AGGREGATE HEALTH STATUS OF XXXXXXXXXXXXXXXXXXXX  
EMPLOYEES

## INTERVIEW RESPONSE SHEET (2)

## I. BIOGRAPHIC AND DEMOGRAPHIC DATA

1. GENDER:
2. ETHNIC GROUP:
3. RANK/OCCUPATIONAL CATEGORY:
4. APPOINTMENT:            FT/PT    Perm/Temp    Academic/Non-academic
5. DEPARTMENT:
6. MEMBERSHIP OF EMPLOYEE REPRESENTATIVE ORGANISATION:
7. RELIGION:
  - 1.
  2.    1. yes, usually  
      2. sometimes  
      3. not usually  
      4. not applicable
8. AGE:    (To be asked when dealing with Section V)
 

1. less than 18	5. 45 - 54
2. 18 - 24	6. 55 - 64
3. 25 - 34	7. 65 and over
4. 35 - 44	

## II. NON-OCCUPATIONAL DATA

1. DESCRIPTION OF LIVING QUARTERS:
  1. Kind of living quarters:
 

1. whole detached house	5. residential hotel
2. semi-detached/cluster house	6. outhouse/garage
3. flat	7. shack/hut
4. rented room in a house	8. hostel
  2. Ownership basis:
 

1. owned (fully paid)	4. other (specify):
2. owned (partially paid)	
3. rented	
  3. Dwelling construction:
    1. floor:
    2. walls:
    3. roof:

4. Number of rooms:

5. Household composition:

No.	Relationship to informant	Gender	Age
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
13.			
14.			
15.			

6. Water supply:

- |                                      |                           |
|--------------------------------------|---------------------------|
| 1. river/stream/dam/spring           | 6. piped to dwelling from |
| 2. private well/borehole/resevoir    | communal purification     |
| 3. community well/borehole           | plant                     |
| 4. community tap/tanker              | 7. other                  |
| 5. untreated water piped to dwelling |                           |

7. Sewage disposal:

- |  |                                      |
|--|--------------------------------------|
| 1. no toilet (ie. open ground, river or stream used) | 7. septic tank and french drain      |
| 2. private pit privy system                          | 8. waterborne sewage disposal system |
| 3. community pit privy system                        | 9. other                             |
| 4. pail system                                       |                                      |
| 5. conservancy tank                                  |                                      |
| 6. chemical toilet                                   |                                      |

8. Refuse disposal:

- |   |                                       |
|---|---------------------------------------|
| 1. none (ie open ground, river or stream) | 4. community refuse collection system |
| 2. burial in a pit                        | 5. other                              |
| 3. incineration                           |                                       |

9. Energy supply:

Type	Purpose		
	Heating	Cooking	Lighting
1. solar			
2. electricity			
3. gas			
4. battery			
5. paraffin			
6. oil			
7. coal/antracite/charcoal			
8. wood			
9. dung pats			
10. candle			
11. other			

10. Main meal and food storage:

i. when cooked:

ii. by whom:

iii. food storage facilities:

11. Laundry:

	Where	By whom
i. clothes washed		
ii. clothes dried		

III. OCCUPATIONALLY ASSOCIATED DATA

1. OCCUPATIONAL HISTORY

No.	Type of organisation	Department	Position held	Period in this position
1.				
2.				
3.				
4.				
5.				
6.				
7.				
8.				
9.				
10.				

2. WORK DESCRIPTION:

3. WORKLOAD:

No.	Yes/sometimes no/don't know	Frequency	Associated work responsibilities	Effects
1.				
2.				
3.				
4.				
5.				

4. WORK-RELATED SOURCES OF STRESS:

5. OCCUPATIONAL SAFETY:

1. Health and safety hazards:

i. physical:

ii. chemical:

iii. biological:

iv. mechanical/ergonomic:

v. psychological:

vi. social:

2. Job rotation:

1. yes, often

2. sometimes

3. occasionally

4. never



3. Details of job rotation:
  - i. type of work:
  - ii. reason for being moved:
  - iii. person responsible for moving respondent:
4. Knowledge of safety programme:
  1. yes
  2. no
  3. don't know
5. Involved in safety programme:
  1. yes
  2. no
  3. don't know
6. Involvement in safety programme:
7. Safety representative:
8. CPR assistance:
9. Proximity of CPR assistance
  1. close - under four minutes
  2. far - four or more minutes
10. Effectiveness of occupational safety programme:
  1. yes
  2. partially/sometimes
  3. no
  4. don't know
11. Effectiveness of occupational safety programme:
  - i. reasons for ineffectiveness:
  - ii. methods of improvement;
12. IOD:
  1. yes
  2. no
13. IOD data
  - i. type/s:
  - ii. site/s:
  - iii. how it/they occurred:

iv. how it/they could have been prevented:

v. whether reported:

1. yes
2. no
3. don't know

vi. why not reported:

vii. person reported to:

viii. results of report:

ix. person who treated it/them:

x. days off work:

14. Protective clothing:

1. yes
2. no
3. don't know

15. Protective clothing:

i. type:

ii. whether worn:

1. yes, always
2. usually
3. sometimes
4. not at all

iii. reasons:

6. JOB INSECURITY:

1. Worries of retrenchment or job loss:

1. not usually
2. sometimes
3. yes, often

2. Reasons for worrying:

7. EMPLOYEE REPRESENTATIVE ORGANISATION

1. Adequacy of support

1. yes, usually
2. sometimes
3. not usually
4. not applicable

IV. GENERAL HEALTH PROFILE

1. PERCEPTIONS OF HEALTH:

1. Definition of good health:

- 1. clinical
- 2. role performance
- 3. adaptive
- 4. actualisation
- 5. adaptive and actualisation
- 6. other (including dimensions of health)

2. Current state of health:

3. Improvement of health status;

1. ways of improvement:

ii. adequacy of current resources and facilities:

- 1. yes
- 2. no
- 3. don't know
- 4. not applicable

iii.

2. PAST HISTORY OF HEALTH:

1. History of illness or injury:

- 1. yes
- 2. no

2.	i. nature of illness or injury	ii. date

3. Hospital admissions:

- 1. yes
- 2. no

4. Details of hospital admissions:

No.	i. Reason	ii. Date	iii. Length of stay	iv. Cost of admission	
				Personal	Medical aid
1.					
2.					
3.					
4.					
5.					

5. Days of work missed due to illness:

6. Predominant reasons:

3. CURRENT HEALTH STATUS:

1. Current long-standing health problem:

1. yes

2. no

2. Nature of health problem:

3. Contribution of previous job:

1. yes

2. no

3. don't know

4. not applicable

4. Contribution of previous job:

i. nature of work:

ii. how it contributed to health problem:

5. Contribution of present job:

1. yes

2. no

3. don't know

4. not applicable

6. Contribution of present job:

i. nature of work:

ii. how it could have contributed:

7. Change of work necessitated:

1. yes

2. no

3. not applicable

8. Future effect on work:

1. yes

2. no

3. don't know

4. not applicable

9. Possible effect on ability to work:

10. Medicines taken in last two weeks:

i.Prescribed		ii.Over-the-counter	
Name	By whom	Name	By whom

(Prescribed/suggested by whom:

- 1. general practitioner in private practice
- 2. doctor at provincial/state hospital/OPD/clinic
- 3. specialist in private practice
- 4. pharmacist
- 5. other - please state whom

11. Help when not well:

12. How often in the last three months:

13. Nature of problems:

14. Regular visits to the doctor:

- 1. yes
- 2. no

15. Check-ups:

No.	i.Nature of problem	ii.Frequency	iii.Where	iv.By whom
1.				
2.				
3.				
4.				

16. BP:

17. Pap smear:

18. Breast check:

19. Health problem/s in the past two weeks:

- 1. yes
- 2. no

20. Details of health problem:

i. nature of health problem/s:

ii. number of days away from work:

iii. assistance with decision to seek help:

iv. desire to consult a doctor:

- 1. yes
- 2. no
- 3. not applicable

- v. doctor actually consulted:
  - 1. yes
  - 2. no
  - 3. not applicable
- vi. reason/s for not consulting doctor (more than one may be selected):
  - 1. insufficient time - too busy at work
  - 2. insufficient time - takes too long to wait to see doctor
  - 3. too much effort
  - 4. costs too much to get to doctor
  - 5. costs too much to see doctor
  - 6. other - please specify:
  - 7. not applicable

4. USE OF HEALTH CARE SERVICES: CONSULTATION OF DOCTORS:

- 1. Doctor usually consulted:
  - 1. doctor at work clinic
  - 2. doctor at provincial/state clinic/PHC centre
  - 3. doctor at provincial/state hospital
  - 4. general practitioner in private practice
  - 5. specialist in private practice (state specialty)
  - 6. other - please specify:

(More than one may be selected, but specify nature of problem for each.)

- 2. Reason/s for consulting this/these doctor/s:
- 3. Location of doctor/s:
- 4. Length of wait:
- 5. Convenience:
  - 1. yes
  - 2. sometimes
  - 3. no
- 6. Reason/s for inconvenience:
- 7. Cost:
  - i. personal:
  - ii. medical aid:
- 8. Satisfaction:
  - 1. yes
  - 2. no
- 9. Reason/s for dissatisfaction:

5. USE OF THE HEALTH CARE SYSTEM: CONSULTATIONS DURING WORKING HOURS:

1. Ease in consulting a doctor during working hours:
  1. yes, usually
  2. sometimes
  3. not usually
2. Reason/s for difficulties:

6. USE OF HEALTH CARE SYSTEM: ANTENATAL CARE:

1. Regular antenatal care:
  1. yes
  2. no
2. Reason/s for not receiving regular antenatal care:
  1. unable to take time off work
  2. cost too much for transport
  3. cost too much for antenatal visits
  4. did not feel antenatal care was important
  5. available antenatal care facilities were unsuitable or unattractive - please specify:
  6. transport difficulties - please specify reason:
  7. other - please specify:
3. Provision of antenatal care:
  - i. provided by:
    1. private midwife
    2. local community clinic ie professional CHN
    3. provincial/state hospital/clinic
    4. private general practitioner
    5. private obstetrician
    6. other - please specify:
  - ii. location:
  - iii. stage of commencement:

7. USE OF HEALTH CARE SYSTEM: HEALTH SERVICES PROVIDED BY THE ORGANISATION:

1. Services available:
2. Use of workplace clinic:
  1. yes, often
  2. sometimes
  3. no, not usually
3. Reason/s for not using workplace clinic:
4. Use of workplace clinic:
  - i. nature of complaint:
  - ii. reason/s for choosing workplace clinic:



## 5. Need for additional services in the workplace:

1. yes
2. no
3. don't know

## 6. Additional services:

## i. type of services:

## ii. potential benefit/s:

## 8. CONSISTENCY OF CARE

1. relatively consistent
2. relatively inconsistent

## V. HEALTH RISK PROFILE:

## 1. HEIGHT:

## 4. PULSE:

## 2. MASS:

## 5. RESPIRATION:

## 3. GRAVIDA/PARA:

## 6. BLOOD PRESSURE:

## 7. URINALYSIS

## 8. PERSONAL HEALTH RISKS:

No.	Site	Change	Type	Amount	Duration	Other
1.						
2.						
3.						
4.						
5.						
6.						
7.						
8.						
9.						
10.						
11.						
12.						
13.						
14.						
15.						
16.						
17.						
18.						
19.						
20.						
21.						
22.						

## 9. SMOKING:

## 1. Currently smoking:

1. yes
2. no

## 2. Previously smoked:

1. yes
2. no

## 3. Previous smoking history:

- i. number of years:
- ii. date of ceasing smoking (month and year):
- iii. usual daily consumption:
  - 1. less than 10
  - 2. 10 - 19
  - 3. 20 - 29
  - 4. 30 - 39
  - 5. 40 or more

## 4. Present smoking history:

- i. number of years:
- ii. usual daily consumption:
  - 1. less than 10
  - 2. 10 - 19
  - 3. 20 - 29
  - 4. 30 - 39
  - 5. 40 or more

## 10. ALCOHOL CONSUMPTION:

## 1. Alcoholic beverages consumed:

- 1. yes
- 2. no

2. Type	3. Amount
1. beer	
2. wine	
3. spirits	
4. other:	

## 11. LEISURE ACTIVITIES:

## 1. Details of leisure time activities:

No.	Type	Frequency		Average time spent	
		per week	per month	weekly	monthly

## 12. EXERCISE:

## 1. Occupational exercise:

- 1. sedentary occupation
- 2. minimal occupational exertion
- 3. moderate occupational exertion, no sweating
- 4. moderate occupational exertion to the point of sweating
- 5. intensive occupational exertion with sweating for  
at least 30 minutes

2. Non-occupational exercise:
  1. no non-occupational exertion
  2. minimal non-occupational exertion
  3. moderate non-occupational exertion, no sweating
  4. moderate non-occupational exertion to the point of sweating
  5. intensive non-occupational exertion with sweating for at least 30 minutes

13. CAFFEINE INTAKE:

Number of cups/cans/ glasses per day	Coffee	Tea	Cocoa	Carbonated beverages (state type)

14. SLEEP:

1. Number of hours sleep per night:
  1. less than 4 hours
  2. 4 - 4.99 hours
  3. 5 - 5.99 hours
  4. 6 - 6.99 hours
  5. 7 - 7.99 hours
  6. more than 8 hours

15. PERCEPTION OF HEALTH RISK:

1. Perception of health risk:
  1. yes
  2. no
  3. don't know
2. Details of perceived health risk:
  - i. type of health problem/s:
    - ii. possibility of health action:
      1. yes
      2. no
      3. don't know
      4. not applicable
    - iii. type of action:
      - iv. prepared to take action:
        1. yes
        2. no
        3. don't know
        4. not applicable
      - v. reasons for not being prepared to take action:

1: Description of the items and responses developed to measure the variables that represent aggregate health status

Variable	Representative item	Subsection	Quest./int.	Amendments following pretests and pilot study	Amendments following field test
PHIC					
Gender	Gender	Gender	Int.		
Ethnic group	Ethnic group	Ethnic group	Int.		
Age	Age	Age	Int.	(To be asked when dealing with section V) 1. less than 18 2. 18-24 3. 25-34 4. 35-44 5. 45-54 6. 55-64 7. 65 and over [Asked late in the interview as it is a sensitive question.]	
Education	1. Standard completed: 2. Post-secondary qualifications:  3. Tertiary qualifications: 4. Other (eg. certificated courses):	Educational status	Quest.	What standard have you completed and passed? 1. less than std 1 2. std 1 3. std 2 4. std 3 5. std 4 6. std 5 7. std 6 8. std 7 9. std 8 10. std 9 11. std 10 12. post-matric certificate or diploma 13. univ. degree	
Marital status	1. single 2. single but promised or engaged, and not living together 3. common law marriage/permanent relationship/ promised or engaged and living together 4. married and living together 5. married but separated 6. divorced 7. widowed  (If appropriate, ask whether the respondent has more than one wife, i.e. traditional marriages.)	Marital status	Quest.		
		Number of wives	Int.	Number of wives:	[Deleted as this will become evident under financial dependents, number of people in dwelling, etc.]  What religion do you belong to?  Do you practise this religion? 1. yes, usually 2. sometimes 3. not usually 4. not applicable [Both the above questions inserted to elicit data pertaining to religious beliefs as they affect health behaviour.]
Residential address	Please state your residential area (not street name or number):	Residential address	Quest.	1. Please state where you live during your working week (suburb, not street name or number - e.g. Umbilo, Umlazi, etc.):	

Variable	Representative item	Subsection	Quest./int.		
2.1.1 Socio-economic level	[To be assessed from address]				
2.1.2 Proximity to workplace	[To be assessed from address]				
2.2 Accomodation					
2.2.1 Ownership	Do you own or rent this dwelling? Ownership basis: 1. owned (fully paid) 2. owned (partially paid) 3. rented 4. other (specify):	Description of living quarters	Int.		
2.2.2 Type	What kind of dwelling do you live in? Kind of living quarters: 1. whole detached house 2. semi-detached/cluster house 3. flat 4. rented room in a house 5. residential hotel 6. outhouse/garage 7. shack/hut 8. hostel  [Question on number of rooms in the house (2.2.4) will give some indication of the type of dwelling.]	Description of living quarters	Int.		
2.2.3 Construction	What is the dwelling constructed from? Dwelling construction: 1. floor: 2. walls: 3. roof:	Description of living quarters	Int.		
2.2.4 Size	How many rooms does this house have? Number of rooms:	Description of living quarters	Int.		
2.2.5 Occupancy	Please indicate household composition: relationship to respondent/gender/age. (If in a hotel or hostel, give details of respondent's room occupancy.)  If your family does not live with you at this address, please state the area where they reside: [This question is intended to identify migrant worker status which can influence all aspects of accomodation]	Description of living quarters  Residential address	Int.  Quest.	(Exclude people who are visiting for less than one month.) [Instruction added to exclude temporary occupants.]  If you have to live away from your close family (eg. spouse/partner and young children) in order to work, please state the area where they live:	
2.3 Basic services					
2.3.1 Water	Please indicate the water supply for the dwelling. Water supply: 1. river/stream/dam/spring 2. private well/borehole/resevoir 3. community well/borehole 4. community tap/tanker 5. untreated water piped to dwelling 6. piped to dwelling from communal purification plant 7. other	Description of living quarters	Int.		

ergy	Please indicate the type/s of energy supply for the dwelling. (If more than one type is used, please state the purpose/s for each one - heating/cooking/lighting).	Description of living quarters	Int.	<ol style="list-style-type: none"> <li>1. solar</li> <li>2. electricity</li> <li>3. gas</li> <li>4. battery</li> <li>5. paraffin</li> <li>6. oil</li> <li>7. coal/anthracite/charcoal</li> <li>8. wood</li> <li>9. dung pats</li> <li>10. candle</li> <li>11. other</li> </ol>	
age	Please indicate the method of sewage disposal for the dwelling.	Description of living quarters	Int.	<ol style="list-style-type: none"> <li>1. no toilet (ie open ground, river or stream used)</li> <li>2. private pit privy system</li> <li>3. community pit privy system</li> <li>4. pail system</li> <li>5. conservancy tank</li> <li>6. chemical toilet</li> <li>7. septic tank and french drain</li> <li>8. waterborne sewage disposal system</li> <li>9. other</li> </ol>	
use/waste	Please indicate the method of refuse disposal utilised by the occupants.	Description of living quarters	Int.	<ol style="list-style-type: none"> <li>1. none (ie open ground, river or stream)</li> <li>2. burial in a pit</li> <li>3. incineration</li> <li>4. community refuse collection system</li> <li>5. other</li> </ol>	
d	If you live in a hostel or rented room, please describe how you usually obtain your main meal of the day (i.e. when it is cooked, by whom, and food storage facilities.)	Description of living quarters	Int.		
ndry	<p>If you live in a hostel or rented room, please describe how you usually get your laundry done (i.e. washing and drying facilities/by whom).</p> <p>[The question identifying migrant labour status (2.2) also pertains to this section as it may affect the ability of the worker to obtain meals (2.3.5) and clean clothes (2.3.6.).]</p>	Description of living quarters	Int.		
				[Data from the items above is used to rate the quality of living quarters - see Table 8.6.]	
port	How do you usually get to work? (You may tick more than one method)	Transport	Quest.	(You may put a X against more than one method)	
	<ol style="list-style-type: none"> <li>1. on foot</li> <li>2. bicycle</li> <li>3. motorcycle/moped/scooter</li> <li>4. own motor vehicle (no regular passenger who contributes to costs)</li> <li>5. private lift club</li> <li>6. taxi/minibus</li> <li>7. bus</li> <li>8. train</li> <li>9. other</li> </ol>				
	Approximately how much do you spend on transport to and from work each day?	Transport	Quest.	Approximately how much money do you spend on transport to and from work each day?	
				If you are in a private lift club, please state how much it costs you to travel to and from work each week:	Quest.
				If you use your own vehicle and do not know how much it costs you, please state	Quest.
				1. the type of vehicle	

	Approximately how long does it take you to travel to work? [Time taken for only one trip asked, in order to make it easier to answer. The researcher will double the answer to obtain an approximate daily estimate.]	Transport	Quest.	ii. the engine capacity iii. distance from home to work in kilometres [Weekly cost of travel to be computed from above data.]  Approximately how long does it usually take you to travel to work (including time spent waiting for transport)? 1. 0 - 29 minutes 2. 30 - 59 minutes 3. 60 - 89 minutes 4. 90 - 119 minutes 5. 120+ minutes	
Family support	How supportive and tolerant is your spouse/partner of your workload usually? 1. supportive and tolerant 2. tolerant but not supportive 3. intolerant  Please describe their behaviour to support your answer:  [The question relating to migrant worker status (2.2) is also relevant as they may obtain less social support from their family than workers who reside with their close family.]  [Specific question not formulated.]	Hours of work for the university  Hours of work for the university	Quest.  Quest.	How supportive is your spouse/partner of your workload usually? [Question remains the same, except for the removal of "and tolerant".]  Please give examples of his/her behaviour to explain your answer to question 5 (eg. helps with household chores):	
Friends	Who do you go to for help when you are not well?  Who helped you to decide what to do about this problem? [Part of the question concerning a health problem experienced in the previous two weeks and resulting in inability to work.]  [The previous two questions relate to the lay referral system as does the question concerning medication (4.3.5) if it was suggested by a person who is not a health care provider, such as a family member or neighbour.]  Please provide details concerning your sports and non-sports leisure time activities (type and average amount of time spent per week/month on each one). [This may reveal membership of clubs and organisations which could provide social support.]  [Part 5 of the strategy will investigate available social support in the community.]	Current health status  Current health status  Leisure activities	Int.  Int.  Int.	Who have you gone to for help when you have experienced a health problem in the past two years?	
Personal factors	Number of children:  [Question on number of wives will be relevant here as well.]  Financial dependents: number/age/gender/relationship/degree of dependency. (Dependency will be deemed: a financial contribution at least every two months towards a person's living costs).	Number of children  Number of wives  Financial dependents	Quest.  Int.  Quest.	How many children do you have? (Please include step-children, adopted children and grown-up children.)  Please supply the following information about people who depend on you for financial support: Relationship means family member (e.g. mother, daughter), friend, etc. Degree of dependency means sole or partial support towards a person's living costs. [It was felt that the question would be easier to answer in	



2.6.2 Cost of living	<p>[Marital status may also relate to dependents - see 1.5.]</p> <p>[Assess in general from Part 5 of the strategy, as well as indirectly for individual members from data pertaining to residential address, cost of transport to and from work, accommodation, number of dependents, migrant worker status, and moonlighting, in relation to a COL index.]</p>			this form as respondents may not wish to reveal such personal data and amounts are often variable.]	
3 WORK					
3.1 Status					
3.1.1 Occupational category	<p>Rank/occupational category</p> <p>Appointment (full-time/part-time, permanent/temporary and other relevant categories)</p> <p>[Data from the work description (3.2.2) will facilitate categorisation.]</p>	<p>Rank/occupational category</p> <p>Rank/occupational category</p>	<p>Int.</p> <p>Int.</p>		
3.1.2 Income	[Too personal to ask of this study population, assess from salary scales according to occupational category.]				
3.2 Work profile					
3.2.1 Occupational history	<p>Occupational history (i.e. positions held prior to this one): number/type of organisation/department/position held/period in this position.</p> <p>[The nature of previous work that could have contributed to work-related health problems (4.3.4) will also provide data on this category.]</p>	Occupational history	Quest.	<p>[Reallocated to the interview, as the researcher will need to ensure that sufficient details are obtained.]</p> <p>Please give details of your previous work positions (jobs): type of organisation/department/position held/period in this position.</p>	
3.2.2 Nature of work	<p>Department</p> <p>[Will assist or confirm the next answer in organisations divided into functional departments/sections/units.]</p> <p>Please briefly describe the nature of your work:</p> <p>[The question on work-related health problems also asks the respondent about the nature of work presently performed that could have contributed to these problems (4.3.4).]</p>	<p>Department</p> <p>Work description</p>	<p>Int.</p> <p>Quest.</p>	<p>[Reallocated to the interview, as the researcher will need to ensure that sufficient details are obtained.]</p> <p>Please briefly describe the nature of your (usual) work.</p>	
3.2.3 Workload	<p>With regard to your workload, do you regularly experience any of the following?</p> <ol style="list-style-type: none"> <li>1. Quantitative overload i.e. too much to do</li> <li>2. Quantitative underload i.e. too little to do</li> <li>3. Qualitative overload i.e. work that is too difficult to do</li> <li>4. Qualitative underload i.e. work that is too easy to do</li> <li>5. Combination of the above</li> </ol> <p>Where you have answered "yes", please indicate the frequency, the work responsibilities/tasks particularly associated with this experience and the effects which this has upon you (i.e. how this makes you feel).</p>	Workload	Int.	[Grid created for answer, with column headings being: No.; Yes/sometimes/no/don't know; Frequency; Associated work responsibilities; Effects.]	
3.2.4 Hours	<p>Please state the average number of hours worked weekly (not peak periods):</p> <ol style="list-style-type: none"> <li>i. at the workplace:</li> <li>ii. at home:</li> </ol>	Hours of work for the university	Quest.		<p>Please state the usual number of hours worked weekly (r peak periods) for the organisation:</p> <ol style="list-style-type: none"> <li>i. at the workplace:</li> <li>ii. at home:</li> <li>iii. in total:</li> </ol> <p>[Included to obtain the total number of hours worked. 'Usual' replaces 'average'.]</p>

	<p>During non-peak periods do you usually work:</p> <ol style="list-style-type: none"> <li>fixed hours:</li> <li>flexi-time, complete period at the workplace:</li> <li>flexi-time, part of the period at home:</li> <li>shiftwork:</li> </ol>	Hours of work for the university	Quest.		
3.2.5 Peaks	<p>Do you experience peaks in your workload?</p> <ol style="list-style-type: none"> <li>yes:</li> <li>no:</li> </ol> <p>If yes, please state:</p> <ol style="list-style-type: none"> <li>when these peaks occur (e.g. at the end of every month):</li> <li>how long the peak usually lasts:</li> <li>average daily number of hours worked during this period:</li> </ol>	Hours of work for the university	Quest.	<ol style="list-style-type: none"> <li>yes, regularly</li> <li>occasionally</li> <li>not at all</li> </ol> <p>[Altered to indicate positive or negative responses as well as frequency.]</p>	<p>(This peak refers to times when you are much more busy than usual)</p> <p>[Inserted to explain the meaning of a peak.]</p>
3.2.6 Moonlighting	<p>Do you take on other work, besides that which you perform for the university, to augment your salary?</p> <ol style="list-style-type: none"> <li>yes, regularly</li> <li>sometimes</li> <li>no, not at all</li> </ol> <p>If 1 or 2, please state:</p> <ol style="list-style-type: none"> <li>nature of the work performed:</li> <li>frequency (average number of times per month):</li> </ol> <p>iii. how this additional income is generally used:</p>	Additional work	Quest.	<p>Do you take on other work, besides that which you perform for the university, to increase your earnings?</p> <p>[Wording simplified.]</p>	<p>iii. usual number of hours worked during this period: ['Average' daily altered to 'usual'.]</p> <p>Do you take on other work, besides that which you perform for the organisation, to increase your earnings?</p> <p>[Reference to the university removed.]</p>
		Additional work	Quest.	<ol style="list-style-type: none"> <li>type of work performed</li> <li>frequency - average number of times per: <ol style="list-style-type: none"> <li>day</li> <li>week</li> <li>month</li> <li>year</li> </ol> </li> </ol> <p>[The pilot study identified the need for a more specific indication of frequency due to the variability of responses.]</p> <p>iii. whether you could meet your basic living costs without this additional income:</p> <ol style="list-style-type: none"> <li>yes, usually</li> <li>sometimes</li> <li>not usually</li> </ol> <p>iv. how this additional income is generally used (eg. to help with basic living costs, education for children, holidays:</p>	
3.2.7 Job rotation	[Will be identified from the work description and occupational history (3.2.2), as well as Parts 3 and 4 of the strategy]				
3.3 Organisational culture				[The question pertaining to work-related sources of stress could yield relevant data on the organisational culture. See 3.4.1.]	
3.3.1 Type	[Will be established from Part 1 of the strategy, although work descriptions from individuals will verify the data.]				
3.3.2 Control	<p>To what extent are you involved in decision-making in relation to your work?</p> <ol style="list-style-type: none"> <li>fully involved in all decisions related to your work:</li> <li>usually consulted, but not usually involved in decision-making:</li> <li>never involved in decisions, occasionally consulted:</li> <li>not at all:</li> </ol> <p>(Likert, 1967, p. 207)</p>	Work satisfaction	Quest.		

	<p>If you need to see a doctor during working hours is it usually easy?</p> <p>If no, please explain why: [Members of organisations with high control may find it difficult to take time off during working hours to obtain health care.]</p> <p>[The determination of the degree of control will be established from Parts 1 and 4 of the strategy.]</p>	<p>Use of the health care system: consultations during working hours</p> <p>Use of the health care system: consultations during working hours</p>	Int.		<p>If you need to see a health professional during working hours is it usually easy?</p> <p>[Broadened to include other categories of health professionals. Respondent may differentiate between health professionals in the work clinic and people in public or private service.]</p>
3.3.3 Integration	<p>How would you describe the social cohesion within the university in respect of:</p> <p>3. Co-operative functioning between departments/sections/units:</p> <p>[The establishment of the amount of integration will be determined from Parts 1 and 4 of the strategy.]</p>	<p>Social cohesion within the university</p>	Quest.	<p>[Removed as it was too vague.]</p>	<p>Do you feel that the different sections/units/department in the organisation co-operate with each other to improve its functioning?</p> <p>1. yes, usually 2. sometimes 3. not usually</p> <p>If 2 or 3, please explain why you feel this way: [To obtain data on integration in the organisation.]</p>
3.3.4 Communication	<p>Please indicate the extent to which information that is necessary to you for the performance of your work, is shared by your superiors:</p> <p>1. superior seeks to give subordinates all relevant information and all information requested: 2. superior gives information needed and answers most queries: 3. superior gives subordinates only the information the superior feels they need 4. superior provides minimum of information: (Likert, 1967, p. 201)</p> <p>How often do you receive conflicting instructions from your superiors?</p> <p>1. very frequently 2. frequently 3. sometimes 4. rarely</p> <p>How frequently do your superiors (the next two levels above you) change instructions which they have issued to you?</p> <p>1. very frequently 2. frequently 3. sometimes 4. rarely</p> <p>[Part 4 of the strategy will also yield information regarding communication in the organisation.]</p>	<p>Communication</p> <p>Communication</p> <p>Communication</p>	<p>Quest.</p> <p>Quest.</p> <p>Quest.</p>	<p>Please indicate the extent to which information that is necessary to you for the performance of your work, is shared by your superior (person immediately in charge of you):</p> <p>1. superior tries to give subordinates all relevant information and all information requested 3. superior gives only the information the superior feels is needed [Responses 2 and 4 remain the same. Wording simplified.]</p> <p>How often do you receive conflicting instructions from your superior?</p> <p>How frequently does your superior change the instructions which he/she has given to you? [Question simplified.]</p>	
3.3.5 Authority	<p>Do you feel that you have enough authority to carry out your work satisfactorily?</p> <p>1. yes, usually 2. sometimes 3. not usually 4. do not know</p> <p>If 2, 3 or 4, please explain why you feel this way:</p> <p>[Question on decision-making (3.3.2) will also indicate the degree of authority given to members.]</p>	<p>Work satisfaction</p> <p>Work satisfaction</p>	<p>Quest.</p> <p>Quest.</p>	<p>[Work-related sources of stress question is intended to identify problems concerning authority with subordinates.] [Authority was defined as the granting of legitimate power or command by the organisation to carry out their work.]</p>	<p>(This authority refers to the power given to you in your job description or delegated by your superior, so that other people will follow your instructions.) [Definition of authority included.]</p>

3.3.6 Responsibility	<p>Do you feel that you are given enough responsibility with regard to carrying out your work?</p> <ol style="list-style-type: none"> <li>1. yes, usually</li> <li>2. sometimes</li> <li>3. not usually</li> <li>4. do not know</li> </ol> <p>If 2, 3 or 4, please explain why you feel this way:</p>	Work satisfaction	Quest.	[Responsibility was defined as being charged with certain duties to perform.]	(This means the duties and tasks that you are expected to carry out according to your job description (delegated to you by your superior.) [Definition included.]
3.4 Self-actualisation					
3.4.1 Work satisfaction	<p>Please indicate how much work satisfaction or enjoyment you derive from your work:</p> <ol style="list-style-type: none"> <li>1. relatively high satisfaction</li> <li>2. some dissatisfaction to moderately high satisfaction</li> <li>3. dissatisfaction to moderate satisfaction</li> <li>4. usually dissatisfied</li> </ol> <p style="text-align: right;">(Likert, 1967, p. 200)</p> <p>If 3 or 4, please give reasons for your answer:</p> <p>[All aspects of organisational culture will also affect work satisfaction.]</p>	Work satisfaction	Quest.		
3.4.2 Recognition	<p>Do you feel that your work contribution is valued by your superiors?</p> <ol style="list-style-type: none"> <li>1. yes, usually</li> <li>2. sometimes</li> <li>3. not usually</li> <li>4. do not know</li> </ol> <p>Please give reasons for your answer and, if necessary, relate your perceptions to the level of the organisation:</p> <p>In view of the lack of funds to increase salaries, are there any other ways in which your work contribution could be rewarded? Please differentiate between levels of the organisation (e.g. at the executive level as opposed to departmental/section/unit level).</p> <p>Are you satisfied with the current method of job rating being used by the university?</p> <ol style="list-style-type: none"> <li>1. yes</li> <li>2. no</li> <li>3. do not know</li> </ol> <p>If 2 or 3, please give reasons for your answer: [Pertinent as job rating indicates how work performance is recognised and influences remuneration.]</p>	<p>Work contribution to the university</p> <p>Work contribution to the university</p> <p>Work contribution to the university</p> <p>Job rating system</p> <p>Job rating system</p>	<p>Quest.</p> <p>Quest.</p> <p>Quest.</p> <p>Quest.</p> <p>Quest.</p>	<p>Please briefly describe any common sources of frustration associated with your work (apart from those already mentioned in Question 3). [Question 3 - workload question.] [This question is intended to elicit data on work-related sources of stress. They could influence work satisfaction.]</p> <p>Do you feel that your work contribution is valued by the person immediately in charge of you? [This question was too vague. The answers would have had to be related to the particular superior.]</p> <p>Please explain why you feel this way:</p> <p>In view of the lack of funds to increase salaries, are there any other ways in which you feel your work effort could be rewarded?</p> <ol style="list-style-type: none"> <li>1. yes</li> <li>2. no</li> <li>3. don't know</li> </ol> <p>If yes, please describe the way/s:</p> <p>(To be answered by non-academic staff only) [The pilot study revealed that only the non-academic jobs are rated.]</p>	<p>Is there any way in which you feel your work effort could be rewarded, other than by increasing your salary/wage? [Reference to the university removed.]</p> <p>(if applicable) Are you satisfied with the current method of job rating being used by the organisation? [Altered to make the instrument suitable for use in other organisations.]</p>
3.4.3 Promotion	Are you satisfied with the current promotion system regarding promotion of employees within your department/section/unit?	Promotion system	Quest.		



	<p>1. yes 2. no 3. do not know</p> <p>Please give reasons for your answer:</p> <p>Do you anticipate that you will be promoted under this system? 1. yes 2. no 3. do not know</p> <p>If 2 or 3, please explain why you feel this:</p> <p>Do you wish to be promoted? 1. yes 2. no 3. do not know</p> <p>Please explain why you feel like this:</p>	Promotion system	Quest.		
		Promotion system	Quest.		
		Promotion system	Quest.		
		Promotion system	Quest.		
		Promotion system	Quest.	3. do not know/not sure	
4.4 Development	[Part 4 of the strategy will yield information with regard to this aspect. In addition, ways of recognising work contribution (3.4.2) could identify workers' desires for development, as could the reasons for not anticipating promotion (3.4.3) if workers feel that they do not have the necessary skills, knowledge, or qualifications to advance.]				
5 Safety					
5.1 Hazards	<p>Please list the health and safety hazards associated with your work and workplace.</p> <p>[A number of other aspects could influence or cause the the hazards. These include a history of certain inherited conditions, illnesses, or injuries (4.2), all the variables relating to current health status (4.3), the psychosocial effects of organisational culture (3.3) and self-actualisation (3.4), and an occupational history of previous exposure (3.2.1).]</p>	Occupational safety	Int.	<p>Health and safety hazards:</p> <p>i. physical: ii. chemical: iii. biological: iv. mechanical/ergonomic: v. psychological: vi. social:</p> <p>[Sources of work-related stress are relevant here.]</p>	<p>Are you ever moved to a different job to give you a change from your current type of work?</p> <p>1. yes, often 2. sometimes 3. occasionally 4. never</p> <p>If 1, 2 or 3, please state:</p> <p>i. what type of work you are given: ii. reason for being given the change iii. who moves you (designation only) [To indicate job rotation in relation to work hazards.]</p>
5.2 Safety programme	Please describe your involvement in the occupational safety programme for your department/section/unit.	Occupational safety	Int.	<p>[Replaced by the following 3 questions.]</p> <p>Is there an occupational safety programme in your department?</p> <p>1. yes 2. no 3. don't know</p>	

	Who is the safety representative for your department/section/unit?	Occupational safety	Int.	<p>Are you involved in the occupational safety programme for your section/unit? (Refers to formal programme only)</p> <p>1. yes 2. no 3. don't know</p> <p>If yes, please describe your involvement.</p> <p>[The pilot study revealed that there could be employees who are unaware of the existence of a programme, or that there is no such programme.]</p> <p>Who would you call for cardio-pulmonary resuscitation assistance in the event of someone collapsing in your work area/department?</p> <p>[Added to obtain data on the availability of trained first aiders, assessment of distance from workarea required.]</p>	Interviewer to evaluate availability of CPR assistance in relation to proximity and time to reach respondents' workplace: 1. close - under four minutes 2. far - four or more minutes
	Do you feel the occupational safety programme for your department/section/unit is effective? 1. yes 2. no 3. don't know	Occupational safety	Int.	<p>1. yes 2. partially/sometimes 3. no 4. don't know [Responses improved.]</p>	
	If 2 or 3, please explain: i. why you think it is ineffective ii. how it could be improved	Occupational safety	Int.	If 2, 3 or 4, please explain:	
ective thing	Are you required by management to wear protective clothing whilst performing any aspect of your work? 1. yes 2. no 3. don't know	Occupational health	Int.		
	If yes, please state: i. type of clothing in relation to the task performed ii. whether you do wear it 1. yes, always 2. usually 3. sometimes 4. not at all iii. if 3 or 4, reason for your answer	Occupational health	Int.		
ries on	Have you received an injury on duty (IOD) during the past 12 months? 1. yes 2. no	Occupational health	Int.	iii. if 3 or 4, please give the reasons for your answer	Have you received an injury whilst carrying out work for the organisation (IOD) during the past 12 months? [Improved explanation.]
	If 1, please state: i. type of injury/ies ii. site of injury/ies iii. how the injury/ies occurred iv. how it/they could have been prevented v. whether you reported the injury as an IOD 1. yes 2. no	Occupational health	Int.	3. don't know [Additional response inserted.]	iii. how it/they occurred  v. whether you reported it/them as an IOD [Improved wording.]

	vi. if no, why you did not report it			if no or don't know, why you did not report it	
	vii. if yes, what happened as a result of your report			vii. who you reported it to [Will assist in explaining the events following the report and indicate the effectiveness of the safety programme.]	vii. who you reported it/them to [Improved wording.]
	[Part 4 of the strategy will also investigate occupational safety in the organisation.]				ix. who treated it/them x. how many days of work you missed as a result of it/them [More detail on IODs, reporting and follow-up.]
ort nditions service	Do you belong to a medical aid society/scheme? 1. yes 2. no	Medical aid scheme	Int.	[Sources of work-related stress may identify perceptions of inadequacy of conditions of service.]  Do you belong to the university's medical aid scheme? [The number of employees who belong to other schemes is insignificant.]	Do you belong to a medical aid society/scheme? 1. yes 2. no
	If yes, please state the name of your medical aid society/scheme:	Medical aid society	Int.	[Deleted as the number of employees who belong to other schemes is insignificant.]	If yes, please state the name of your medical aid society/scheme: [Both the above questions included to make the instrument suitable for use in other organisations.]
	Please state the reason for your answer (i.e. membership of this particular society/scheme or non-membership).	Medical aid society	Int.	[Deleted for the above reason.]	
	the approximate cost of the hospital stay (personal and medical aid) [This is part of the question relating to hospital stay (4.2.4) which will yield data on the adequacy of the medical aid scheme as will the question on the cost of a consultation with a doctor (4.5.6).]	Past history of ill-health or injury	Int.	If yes, are you satisfied with the scheme? 1. yes, usually 2. sometimes 3. not usually  If 2 or 3, please explain why you feel this way: [These 2 questions will assist in establishing the adequacy and acceptability of the scheme as a condition of service. All the questions pertaining to the medical aid scheme have been reallocated to the questionnaire.]	
	How many days vacation leave do you still have for this year (an approximate number is adequate) i. compulsory: ii. cumulative:	Vacation leave	Quest.	(To be answered by academic staff only) [The pretests and pilot study revealed that academic staff are not allocated a specific number of days leave. Leave is taken in relation to work demands and at the discretion of the head of the department.]	[Deleted reference to question being answered by academic staff only, to make the instrument suitable for use in other organisations.]
	How often are you able to take vacation leave when it would best suit you from a personal point of view? 1. very frequently 2. frequently 3. sometimes 4. rarely	Vacation leave	Quest.	(This refers to requests for 5 or more days leave only)	
	If 3 or 4, please state the reasons for not being able to do so:	Vacation leave	Quest.		
	How many days sick leave have you taken this year?	Past history of ill-health or injury	Int.		



Employee facilities	<p>the approximate length of hospital stay [Refers to hospital admissions in the past 12 months and is a check question on days of sick leave. However, some workers may use vacation leave when their sick leave has been used up and this must be clarified in the interview.]</p> <p>[The number of days on which the respondent was unable to work due to a health problem in the previous two weeks (4.3.2) is also a check question to verify the number of days taken as sick leave.]</p> <p>[Data on this will be obtained in Part 4 of the strategy.]</p>	Past history of ill-health or injury	Int.	<p>If you are a working mother, have you been able to make adequate arrangements for the care of your child/children while you are at work?</p> <p>1. yes 2. no</p> <p>If no, please describe the problems you have had:</p>	<p>How would you rate the facilities at work for employees (eg. toilets, public telephones, etc.)?</p> <p>1. very good 2. good 3. fair 4. poor 5. very poor</p> <p>If 3, 4 or 5, please explain why you feel this and indicate what additional facilities are needed: [To obtain data on members' perceptions of adequacy of facilities for employees in the workplace.]</p>
Employee representative organisations	Membership of employee representative organisation	Membership of employee representative organisation	Int.		<p>Do you feel that the employee representative organisation you belong to, gives you enough support in your workplace?</p> <p>1. yes, usually 2. sometimes 3. not usually 4. not applicable</p> <p>If 2 or 3, please explain why you feel this way: [To elicit data on EROs. Asked later in interview so that respondent is more at ease with interviewer.]</p>
Health care	<p>What health services exist on the campus which could be used by employees experiencing a health problem? [Indicates knowledge of health care available at work.]</p> <p>Do you use the clinic on the campus?</p> <p>1. yes, often 2. sometimes 3. no, not usually</p> <p>If no, why not?</p> <p>If yes or sometimes, please state:</p> <p>i. the nature of the complaint for which you last visited the clinic ii. why you chose the clinic and not some other health care service</p> <p>Do you feel the service on the campus could be broadened?</p> <p>1. yes 2. no 3. don't know</p>	<p>Use of health care system: campus services</p> <p>"</p> <p>"</p> <p>"</p> <p>"</p>	<p>Int.</p> <p>Int.</p> <p>Int.</p> <p>Int.</p> <p>Int.</p>	<p>Do you feel that any additional health services for the staff should be provided on the campus?</p>	<p>What health services exist in the organisation that could be used by employees experiencing a health problem? [Altered for use in other organisations.]</p> <p>If there is a clinic in the workplace do you use it? [Altered for use in other organisations.]</p> <p>i. the nature of the complaint for which you last visited the workplace clinic ii. why you chose the workplace clinic and not some other health service [Altered for use in other organisations.]</p> <p>Do you feel that any additional health services should be provided in the workplace for employees? [Altered for use in other organisations.]</p>

<p>If yes, please state:</p> <p>i. in what way</p> <p>ii. why you feel this would be advantageous</p> <p>Would you participate in a health promotion programme at work, the nature of which was determined by the employees according to their needs?</p> <p>1. yes</p> <p>2. no</p> <p>3. do not know</p> <p>If no or do not know, please state the reason for your answer:</p> <p>If yes, please tick any of the following aspects which you think would be useful/interesting:</p> <p>i. evaluation and monitoring of work environment to promote a healthy work environment</p> <p>ii. physical fitness and exercise programme</p> <p>iii. nutrition</p> <p>iv. weight control</p> <p>v. smoking cessation</p> <p>vi. communication skills</p> <p>vii. leadership skills</p> <p>viii. stress management</p> <p>ix. management and prevention of depression and suicide</p> <p>x. alcohol and substance abuse prevention and control</p> <p>xi. accident prevention</p> <p>xii. first aid</p> <p>xiii. prenatal and postnatal health care</p> <p>xiv. pre-retirement preparation</p> <p>xv. back care</p> <p>xvi. cardio-pulmonary fitness</p> <p>xvii. cardio-pulmonary resuscitation</p> <p>xviii. hypertension screening and management</p> <p>[The question relating to the ease with which workers can consult a doctor during working hours (3.3.2) will also yield useful data for assessing the occupational health programme in the organisation.]</p> <p>[The sequence of these questions was carefully planned to avoid influencing respondents' answers.]</p>	<p>Use of health care system: campus services</p> <p>General health profile</p> <p>General health profile</p> <p>General health profile</p>	<p>Int.</p> <p>Quest.</p> <p>Quest.</p> <p>Quest.</p>	<p>i. what additional services</p> <p>ii. why you feel that this would be of benefit [Wording simplified.]</p> <p>If a health promotion programme, which had been planned with employees according to their needs, was offered at work would you participate in it? [Wording simplified.]</p> <p>xvi. cardio-pulmonary fitness (to prevent heart and circulatory disease)</p> <p>xviii. hypertension (high blood pressure) screening and management</p> <p>xix. AIDS</p> <p>xx. family planning or spacing</p> <p>[Replaced with the following questions, as the original ones were too vague and confusing.]</p> <p>Have you experienced any personal problems which have caused you great worry, whilst you have been working in this job?</p> <p>1. yes</p> <p>2. no</p> <p>If yes, please state (where applicable) whether you feel you have been given enough support from:</p> <p>i. colleagues in your section/unit</p> <p>ii. the head of your section/unit</p> <p>iii. the head of your department</p>	<p>v. how to stop smoking [Wording simplified.]</p> <p>Have you experienced any personal problems which have caused you great worry, unhappiness or bother whilst you have been working in this job? [Broadened as 'worry' was too restrictive.]</p> <p>If yes, please state (where applicable) whether you feel you have been given enough support from:</p> <p>i. colleagues in your section/unit</p> <p>ii. the head of your section/unit</p> <p>iii. the head of your department</p>
<p>How would you describe the social cohesion within the university in respect of:</p> <p>1. mutual support between employees in your department in times of personal or work problems:</p> <p>2. support from the upper levels of management for employees in times of personal or work problems:</p> <p>3. co-operative functioning between departments/sections/units:</p> <p>(Please substantiate your answers)</p>	<p>Social cohesion within the university</p>	<p>Quest.</p>	<p>[Replaced with the following questions, as the original ones were too vague and confusing.]</p> <p>Have you experienced any personal problems which have caused you great worry, whilst you have been working in this job?</p> <p>1. yes</p> <p>2. no</p> <p>If yes, please state (where applicable) whether you feel you have been given enough support from:</p> <p>i. colleagues in your section/unit</p> <p>ii. the head of your section/unit</p> <p>iii. the head of your department</p>	<p>Have you experienced any personal problems which have caused you great worry, unhappiness or bother whilst you have been working in this job? [Broadened as 'worry' was too restrictive.]</p> <p>If yes, please state (where applicable) whether you feel you have been given enough support from:</p> <p>i. colleagues in your section/unit</p> <p>ii. the head of your section/unit</p> <p>iii. the head of your department</p>

				iv. Personnel Department v. other (please specify) [Grid created to indicate positive and negative answers and frequency.]  Have you experienced any work-related problems which have caused you great worry whilst you have been working in this job? 1. yes 2. no  If yes, please state (where applicable) whether you feel you have been given enough help from: i. colleagues in your section/unit ii. the head of your section/unit iii. the head of your department iv. the dean of the faculty (academic staff only) v. the relevant vice-principal vi. your staff association or trade union vii. others (please specify) [Grid created to indicate positive or negative answers and frequency.]	iv. Personnel Department v. family vi. friends outside the workplace vii. others (please specify) [To obtain data relating to social support.]  Have you experienced any work-related problems which have caused you great worry, unhappiness or bother whilst you have been working in this job? [Broadened as 'worry' was too restrictive.]  If yes, please state (where applicable) whether you feel you have been given enough help from: i. colleagues in your section/unit ii. the head of your section/unit iii. the head of your department iv. your staff association or trade union v. others (please specify) [Categories changed to suit other organisations.]
3.6.6 Job security	[Sources of help when not well (2.5.3), person/s who helped respondent decide what to do about a recent health problem (2.5.3), and ease in consulting a doctor during working hours (3.3.2) all relate to the degree of social support present in the organisation.]  Do you worry that your job may be made redundant in view of the present financial situation? [Allocated to the interview as it may be a sensitive or alarming question. Respondent will be reassured that the researcher does not have any additional and/or confidential information about this. It is merely intended to identify whether the respondent is anxious in this regard.]	Job insecurity	Int.	1. not usually 2. sometimes 3. yes, often  If 2 or 3, please explain why you feel that your job or you are at risk of being made redundant/retrrenched.	Do you worry that you may be retrrenched or lose your job  If 2 or 3, please explain why you feel this way: [Altered for use in other organisations.]
1. HEALTH					
1.1 Beliefs					
1.1.1 Concepts of health	How would you define 'good health' in your own words?	Perceptions of health	Int.	[Although this is an open question, responses will coded as shown below.] 1. clinical 2. role performance 3. adaptive 4. actualisation 5. adaptive and actualisation 6. other	
1.2 Locus of control	If you feel that your state of health could improve, please indicate: i. how this could be achieved ii. whether you could achieve it with the current resources and facilities available to you 1. yes 2. no 3. don't know  iii. if no, what additional resources and facilities you would require ii. whether you think that any action can be taken to prevent the development of the health problem/s	Perceptions of health  Perception of health risk	Int.  Int.	4. not applicable	other (including dimensions of health) [Response improved.]

	<p>1. yes 2. no 3. don't know</p> <p>iii. if yes, what action could be taken</p> <p>iv. whether you would be prepared to take this action 1. yes 2. no 3. don't know</p> <p>v. if no or don't know, please explain why you feel this way. [These questions relate to perceived health risk and whether the respondent feels that any action can be taken to avert it.]</p> <p>Would you like to learn more about how to promote or protect your health? 1. yes 2. no 3. do not know</p> <p>If no, please explain why you feel this:</p> <p>If yes, please state what you would like to learn more about: [This set of questions, together with those in 3.6.4 on the aspects of the health promotion programme, could yield data that indicate the respondent's locus of control.]</p>	General health profile	Quest.	4. not applicable	
		General health profile	Quest.	4. not applicable	
		General health profile	Quest.		
4.2 History					
4.2.1 Inherited	<p>Taking account of your family history, life-style, past and current health status, do you think that you are at risk of developing any serious health problem in the future? 1. yes 2. no 3. don't know</p> <p>If yes, please state: i. the type of health problem/s [These questions could reveal an inherited health problem or a predisposition to develop one, as could the question relating to a history of illness (4.2.2).]</p>	Perception of health risk	Int.		
4.2.2 Illness 4.2.3 Injury }	<p>Have you experienced any serious illness, injuries or undergone any operations? 1. yes 2. no</p> <p>If yes, please state: i. what these were ii. approximately when they occurred</p>	Past history of ill-health or injury	Int.		
4.2.4 Hospitalisation	<p>Were you admitted to hospital in the past twelve months? 1. yes 2. no</p> <p>If yes, for each admission, please state: i. the reason for admission ii. the month of admission iii. the approximate length of hospital stay</p>	Past history of ill-health or injury	Int.		



4.2.5 Sickness absence	<p>[Note that the occupational history (3.2.1) of an individual may have an influence on inherited conditions, illness, and injury.]</p> <p>How many days sick leave have you taken this year?</p> <p>What was/were the predominant reason/s?</p> <p>[The questions on the number of days of work missed due to a health problem in the last two weeks (4.3.2) and period of hospital stay in the last twelve months (4.2.4) will also serve as a check on the answer regarding absence from work due to ill-health. The aim is to verify health history and not the use of sick leave as a condition of service as in 3.6.1.]</p>	<p>Past history of ill-health or injury</p> <p>Past history of ill-health or injury</p>	<p>Int.</p> <p>Int.</p>	<p>How many days of work have you missed due to illness this year?</p>	<p>Urinalysis</p> <p>[Screening for protein, blood and glucose.]</p> <p>[Interviewer must establish how recently.]</p>
4.3 Current status	<p>4.3.1 Subjective</p> <p>How would you describe your own current state of health?</p> <p>4.3.2 Objective</p> <p>[To be based on biophysical and physiological measures, together with data from the following questions.]</p> <p>Height</p> <p>Mass</p> <p>Gravida/para</p> <p>Pulse</p> <p>Respiration</p> <p>Blood pressure</p> <p>Have you experienced any of the following lately?</p> <ol style="list-style-type: none"> <li>1. Chronic fatigue (duration)</li> <li>2. Persistent headaches (duration)</li> <li>3. Night sweats (duration)</li> <li>4. Persistent pain (duration)</li> <li>5. Persistent change in bowel habits (nature of change and duration)</li> <li>6. Persistent change in bladder habits (nature of change and duration)</li> <li>7. A sore that has taken longer than usual to heal (site and duration)</li> <li>8. Unusual bleeding (site, amount and duration)</li> <li>9. Unusual discharge (site, amount and duration)</li> <li>10. Thickening or lump in the breast or elsewhere (site, nature and duration)</li> <li>11. Persistent indigestion (duration)</li> <li>12. Persistent difficulty in swallowing (duration)</li> <li>13. Obvious change in wart or mole (nature of change and duration)</li> <li>14. Persistent cough (type and duration)</li> <li>15. Persistent hoarseness of voice (duration)</li> <li>16. Persistently heavy periods (average length of period and duration)</li> </ol>	<p>Perceptions of health</p> <p>Height</p> <p>Mass</p> <p>Gravida/para</p> <p>Pulse</p> <p>Respiration</p> <p>Blood pressure</p> <p>Personal health risks</p>	<p>Int.</p> <p>Int.</p> <p>Int.</p> <p>Int.</p> <p>Int.</p> <p>Int.</p> <p>Int.</p>	<p>[To be interpreted according to the Metropolitan Life Scales, 1983.]</p> <ol style="list-style-type: none"> <li>1. underweight for height</li> <li>2. appropriate weight for height</li> <li>3. overweight for height</li> </ol> <p>[According to the S.A. Hypertension Society, 1989.]</p> <ol style="list-style-type: none"> <li>1. hypertensive</li> <li>2. bordering on hypertensive</li> <li>3. normotensive</li> <li>4. bordering on hypotensive</li> <li>5. hypotensive</li> </ol> <p>[Sequence altered to ask more personal questions later.]</p> <ol style="list-style-type: none"> <li>1. Obvious change in wart or mole (nature of change and duration)</li> <li>2. Loss of weight (amount and duration)</li> <li>3. Chronic fatigue (duration)</li> <li>4. Persistent lack of sleep (duration, average number of hours of sleep and number of times of waking each night in the past month)</li> <li>5. Persistent headaches (duration)</li> <li>6. Night sweats (duration)</li> <li>7. Persistent pain (duration)</li> <li>8. A sore that has taken longer than usual to heal (site and duration)</li> <li>9. Unusual bleeding (site, amount and duration)</li> <li>10. Unusual discharge (site, amount and duration)</li> <li>11. Thickening or lump in breast or elsewhere (site, nature and duration)</li> <li>12. Persistent difficulty in swallowing (duration)</li> <li>13. Persistent indigestion (duration)</li> <li>14. Persistent hoarseness of voice (duration)</li> <li>15. Persistent cough (type and duration)</li> <li>16. Persistent change in bladder habits (nature of change and duration)</li> </ol>	<p>Urinalysis</p> <p>[Screening for protein, blood and glucose.]</p> <p>[Interviewer must establish how recently.]</p>

	<p>17. Persistent constipation (duration)</p> <p>18. Persistent diarrhoea (duration)</p> <p>19. Persistent feelings of hopelessness or helplessness (duration)</p> <p>20. Persistent depression (duration)</p> <p>21. Persistent lack of sleep (duration, average number of hours of sleep per night and average number of times of waking)</p> <p>22. Loss of weight (amount and duration)</p>			<p>17. Persistent change in bowel habits (nature of change and duration)</p> <p>18. Persistent constipation (duration)</p> <p>19. Persistent diarrhoea (duration)</p> <p>20. Persistently heavy periods (average length of period and duration)</p> <p>21. Persistent feelings of hopelessness or helplessness (duration)</p> <p>22. Persistent depression ( duration)</p> <p>[4 will also validate the other sleep question - 4.4.6.]</p>	
	<p>In the past two weeks, were there any days on which you were unable to work due to a health problem?</p> <p>1. yes</p> <p>2. no</p>	Current health status	Int.		Have you experienced a health problem in the past two weeks? [Many people experience health problems, yet continue to work. Comparison with answers for personal health risks will indicate perceived health status.]
	<p>If yes, please state:</p> <p>i. what the problem was</p> <p>ii. how many days you were unable to work</p> <p>[Indicates severity, sickness absence and sick leave.]</p>	Current health status	Int.		
	<p>[Other questions which will aid objective assessment of health status include reasons for regular health check-up (4.4.1), e.g. hypertension, and effects of workload (3.2.3). Factors such as age (1.3), gender (1.1), and occupational history (3.2.1) must be taken into account.]</p>				[Scale developed to rate objective health status - see Table 8.39.]
4.3.3 Longstanding illness/disease	<p>Do you have any longstanding health problem or disability that you are aware of?</p> <p>1. yes</p> <p>2. no</p>	Current health status	Int.		
	<p>If yes, please state what it is:</p>	Current health status	Int.		
4.3.4 Work-related health problems	<p>Do you think your present or previous occupation might have contributed to the development of this problem?</p> <p>1. yes</p> <p>2. no</p> <p>3. don't know</p>	Current health status	Int.	<p>Do you think your previous job might have contributed to the development of this problem?</p>	
	<p>If yes, please state:</p> <p>i. the nature of the work performed</p> <p>ii. how it could have contributed to the health problem</p>	Current health status	Int.	<p>4. not applicable</p>	
	<p>Did this health problem necessitate a change of occupation or type of work?</p> <p>1. yes</p> <p>2. no</p>	Current health status	Int.	<p>Do you think your present job might have contributed to the health problem?</p> <p>1. yes</p> <p>2. no</p> <p>3. don't know</p> <p>4. not applicable</p> <p>If yes, please state:</p> <p>i. the nature of the work performed</p> <p>ii. how it could have contributed to the health problem</p>	
				<p>3. not applicable</p>	

	<p>Do you anticipate that it will affect your ability to work in the future (i.e. with the passage of time)?</p> <ol style="list-style-type: none"> <li>yes</li> <li>no</li> <li>don't know</li> </ol>	Current health status	Int.		Do you anticipate that it will affect your ability to work in the future (as time goes by)? [Wording simplified.]
	<p>If yes, please describe how it could affect your ability to work:</p> <p>[The question on occupational history (3.2.1) may also verify this or provide additional information.]</p>	Current health status	Int.	<p>4. not applicable</p> <p>[The question on work-related sources of stress may yield data pertaining to this.]</p>	
4.3.5 Medication	<p>What medicines have you taken in the last two weeks (prescribed and over-the-counter)?</p> <p>Who prescribed or suggested you take these medicines?</p> <ol style="list-style-type: none"> <li>general practitioner in private practice</li> <li>doctor at provincial/state hospital/OPD/clinic</li> <li>specialist in private practice</li> <li>pharmacist</li> <li>other - please state whom</li> </ol>	Current health status	Int.	<p>What medicines have you taken in the last two weeks (i. prescribed and by whom; ii. over-the-counter and by whom)?</p> <p>[Questions remain the same, except that a response grid has been created.]</p>	(Take care to include medications from traditional healer [Instruction to interviewer to ensure data collection on the use of traditional medicines.]
4.4 Self-care					
4.4.1 Perceptions susceptibility	<p>[The questions concerning possible future effects of work-related health problem (4.3.4) are also pertinent here.]</p> <p>Do you regularly visit a doctor or clinic for a health check-up?</p> <ol style="list-style-type: none"> <li>yes</li> <li>no</li> </ol> <p>If yes, please state:</p> <ol style="list-style-type: none"> <li>what you are checked for</li> </ol> <p>Taking account of your family history, life-style, past and current health status, do you think that you are at risk of developing any serious health problem in the future?</p> <ol style="list-style-type: none"> <li>yes</li> <li>no</li> <li>don't know</li> </ol> <p>if yes, please state:</p> <ol style="list-style-type: none"> <li>the type of health problem/s</li> </ol> <p>[The questions relating to antenatal care (4.4.5), i.e. if it was received, if not why not, and stage commenced, may also indicate perception of risk.]</p>	Current health status	Int.		
		Current health status	Int.	<p>[Grid created for further information.]</p> <ol style="list-style-type: none"> <li>nature of problem</li> <li>frequency</li> <li>where</li> <li>by whom</li> </ol>	
		Perception of health risk	Int.		
		Perception of health risk	Int.	<p>[The additional questions relating to blood pressure, pap smear, and breast examination (4.4.5), also indicate perceptions of susceptibility in addition to knowledge.]</p>	
4.4.2 Self-diagnosis	<p>[The questions pertaining to the self-prescription of medicines (4.3.5) and decision about action to take regarding a health problem in the past two weeks (2.5.3), if it was the respondent who decided that the health problem required the assistance of a health professional, can indicate self-diagnosis.]</p>				
4.4.3 Self-treatment	<p>[The question relating to the taking of medicines (4.3.5) also indicates self-treatment.]</p> <p>whether you would be prepared to take this action</p>	Perception of health risk	Int.		



	<p>1. yes 2. no 3. don't know</p> <p>if no or do not know, please explain why you feel this way [The two previous questions refer to the action that could be taken to prevent a health problem which the respondent feels at risk of developing (4.4.1). Actions to maintain health are an important part of self-treatment.]</p>	Perception of health risk	Int.		
4.4 Use of alternative health care practitioners	<p>Who do you go to for help when you are not well?</p> <p>How often have you gone to this person in the last three months?</p> <p>What was/were the health problems which you went to see them about?</p> <p>[The question on medication (4.3.5) may also reveal the use of alternative health care practitioners.]</p>	<p>Current health status</p> <p>Current health status</p> <p>Current health status</p>	<p>Int.</p> <p>Int.</p> <p>Int.</p>	Who have you gone to for help when you have experienced a health problem in the last two years?	
4.5 Use of health care practitioners	<p>[All the questions referred to in 4.4.4 will also indicate the use of health care practitioners.]</p> <p>Do you regularly visit a doctor or clinic for a health check-up?</p> <p>1. yes 2. no</p> <p>If yes, please state:</p> <p>i. what you are checked for</p> <p>iii. who performs the check-up (professional category only)</p>	<p>Current health status</p> <p>Current health status</p>	<p>Int.</p> <p>Int.</p>	<p>At the moment, are you regularly visiting a doctor or clinic for a health check-up (eg. blood pressure)?</p> <p>ii. how often you are checked [Added in to obtain more data on use of health care practitioners and severity of health problem.]</p> <p>When was your blood pressure last checked by a doctor or professional nurse? (Month and year only)</p> <p>When did you last have a pap smear (women only)? (Month and year only)</p> <p>When did you last have your breasts checked for lumps by a doctor or professional nurse (women only)? (Month and year only)</p> <p>[The 3 preceding questions were included to obtain more data on use of health care professionals.]</p>	
	<p>iv. whether you wished to consult a doctor</p> <p>1. yes 2. no</p>	Current health status	Int.	3. not applicable	
	<p>v. if yes, whether you did consult a doctor</p> <p>1. yes 2. no</p>	Current health status	Int.	3. not applicable	
	<p>vi. if no, why you did not consult a doctor</p> <p>1. insufficient time - too busy at work 2. insufficient time - takes too long to wait to see doctor 3. too much effort 4. costs too much to get to doctor 5. costs too much to see doctor 6. other - please specify</p>	Current health status	Int.	7. not applicable	

	<p>[The preceding three questions refer to a health problem in the previous two weeks which prevented the respondent from working (4.3.2).]</p> <p>When you need to visit a doctor for a general health problem:</p> <p>Who do you usually consult (select from categories)?</p> <ol style="list-style-type: none"> <li>1. doctor at work clinic</li> <li>2. doctor at provincial/state clinic/PHC centre</li> <li>3. doctor at provincial/state hospital</li> <li>4. general practitioner in private practice</li> <li>5. specialist in private practice (state specialty)</li> <li>6. other - please specify:</li> </ol> <p>(More than one may be selected, but specify nature of the problem for each.)</p> <p>Why do you consult this doctor?</p> <p>To be answered by women who have been pregnant during the last two years, whilst employed at the university.</p> <p>Did you receive regular antenatal care?</p> <ol style="list-style-type: none"> <li>1. yes</li> <li>2. no</li> </ol> <p>If no, please state why you did not:</p> <ol style="list-style-type: none"> <li>1. unable to take time off work</li> <li>2. cost too much for transport</li> <li>3. cost too much for antenatal visits</li> <li>4. did not feel antenatal care was important</li> <li>5. available antenatal care facilities were unsuitable or unattractive - please specify:</li> <li>6. transport difficulties - please specify reason:</li> <li>7. other - please specify:</li> </ol> <p>If yes, please state:</p> <ol style="list-style-type: none"> <li>i. who from (select from the categories provided) <ol style="list-style-type: none"> <li>1. private midwife</li> <li>2. local community clinic i.e. professional community health nurse</li> <li>3. provincial/state hospital/clinic</li> <li>4. private general practitioner</li> <li>5. private obstetrician</li> <li>6. other - please specify:</li> </ol> </li> <li>ii. where you went for this care</li> <li>iii. at what stage of your pregnancy you commenced antenatal care</li> </ol> <p>[The questions about hospitalisation (4.2.4) will also indicate patterns of use of health care practitioners.]</p>	<p>Use of the health care system: consultation of doctors</p> <p>"</p> <p>Use of the health care system: antenatal care</p> <p>Use of the health care system: antenatal care</p> <p>Use of the health care system: antenatal care</p> <p>Use of the health care system: antenatal care</p>	<p>Int.</p> <p>Int.</p> <p>Int.</p> <p>Int.</p> <p>Int.</p>	<p>When you need to visit a doctor for a general health problem (ie. not a specific complaint for which you are already seeing a specialist):</p> <p>[The meaning of "general" has been clarified.]</p>	<p>[Designed to elicit data on the the type of health problem for which the doctor is consulted, not reasons of convenience etc.]</p> <p>To be answered by women who have been pregnant during the last two years, whilst employed in the organisation.</p> <p>[Altered to suit other organisations.]</p> <p>Consistency of care:</p> <p>(To be evaluated by interviewer according to responses of use of health care practitioners. Consistency is the consistent use of one doctor or group practice or health service over a period of at least two years, so that records are built up for that individual.)</p> <ol style="list-style-type: none"> <li>1. relatively consistent</li> <li>2. relatively inconsistent</li> </ol>
.6 Health risk profile	<p>[The whole set of questions concerning signs and symptoms listed in 4.3.2 are also used for health risk assessment.]</p>				

Do you currently smoke cigarettes or a pipe? 1. yes 2. no	Smoking	Int.		
If no, have you smoked previously? 1. yes 2. no	Smoking	Int.		
If yes, please state:  i. when you stopped smoking ii. what your average daily consumption was	Smoking	Int.	approximately how many years you smoked for (include all periods of smoking if you have previously stopped and then resumed) [Additional question] (month and year) [Inserted.] what your average daily consumption was (before attempting to stop) 1. less than 10 2. 10-19 3. 20-29 4. 30-39 5. 40 or more  If you do smoke approximately how many years have you smoked for (include all periods of smoking if you have previously stopped and then resumed) [Additional question]	what your usual daily consumption was (before attempting to stop) [Changed as 'average' has mathematical connotations.]
If you do smoke, how many cigarettes or pipes do you smoke per day?	Smoking	Int.	how many cigarettes or pipes do you smoke per day? 1. less than 10 2. 10-19 3. 20-29 4. 30-39 5. 40 or more	how many cigarettes or pipes do you usually smoke per day? [Wording improved.]
Do you drink alcoholic beverages? 1. yes 2. no	Alcohol consumption	Int.		
What type of alcoholic beverage do you usually drink?	Alcohol consumption	Int.		
How many glasses/bottles/cans of these do you drink in a week on average?	Alcohol consumption	Int.	[Consumption to be computed from the following scale, adapted from Whitney and Hamilton (1984) and Yerman (1991): one beer (360ml) 13.7g; one glass of wine (150ml) 8.0g; one glass of fortified wine (150ml) 13.3g; and one tot of spirits (45ml) 18.0g.]	How many glasses/bottles/cans of these do you usually drink in a week? [Changed as 'average' has mathematical connotations.]
Please provide details concerning your sports and non-sports leisure-time activities (type and average amount of time spent per week/month on each one).	Leisure activities	Int.		
Please indicate the frequency of exercise obtained during an average week: Occupational exercise 1. sedentary occupation 2. minimal occupational exertion 3. moderate occupational exertion, no sweating 4. moderate occupational exertion to the point of sweating 5. intensive occupational exertion with sweating for at least 30 minutes	Exercise	Int.		
	Exercise	Int.	[Explained that this referred to the general exercise pattern associated with work.]	
Recreational exercise 1. no recreational exertion 2. minimal recreational exertion 3. moderate recreational exertion, no sweating 4. moderate recreational exertion to the point of sweating  5. intensive recreational exertion with sweating for at least 30 minutes	Exercise	Int.	Non-occupational exercise 1. no non-occupational exertion 2. minimal non-occupational exertion 3. moderate non-occupational exertion, no sweating 4. moderate non-occupational exertion to the point of sweating 5. intensive non-occupational exertion with sweating for at least 30 minutes	Please indicate the frequency of exercise usually obtained during one week: [Changed as 'average' has mathematical connotations.]

	<p>[The previous 2 questions were formulated by combining scales from Burns &amp; Grove, 1987, p. 289, and Pender, 1987, p. 124.]</p> <p>Number of cups/cans of coffee (not decaffeinated)/tea/cocoa/cola per day:</p> <p>[A number of other questions will also relate to health risk assessment. These include the willingness to take action to prevent a perceived health risk (4.1.2), to participate in a health promotion programme (3.6.4), use of antenatal health care (4.4.5), working hours (3.2.4), use of vacation leave (3.6.1), effects of workload (3.2.3), occupational history (3.2.1), and hazards in the workplace (3.5.1). In addition, variables such as age (1.3), gender (1.1), ethnicity (1.2), and residential conditions (2) must be taken into account when identifying health risks.]</p>			<p>[To be computed from the following scale, based on Hill and Smith (1985), Whitney and Hamilton (1984) and Yerman (1991):</p> <p>one cup of tea (180ml) 50mg; one cup of instant coffee (180ml) 60mg; one cup of cocoa (180ml) 13mg; and one can of cola beverage (360ml) 65mg.]</p> <p>Please state the average number of hours of sleep obtained each night.</p> <ol style="list-style-type: none"> <li>1. less than 4 hours</li> <li>2. 4 - 4.99 hours</li> <li>3. 5 - 5.99 hours</li> <li>4. 6 hours - 6.99 hours</li> <li>5. 7 hours - 7.99 hours</li> <li>6. 8 hours and over</li> </ol> <p>[Added as the question on insomnia only identifies the amount of sleep when the respondent perceives that there is a problem. Also validates the answer for the insomnia question - see 4.3.2.]</p> <p>[A number of items from the instrument are used to assess level of stress - see Table 8.53.]</p>	<p>Usual number of cups/cans of coffee (not decaffeinated)/tea/cocoa/cola per day:</p> <p>[Wording improved.]</p> <p>Please state the usual number of hours of sleep obtained each night.</p> <p>[Changed as 'average' has mathematical connotations.]</p>
<p>isation of a care a structure</p> <p>re of ices</p> <p>nnel</p> <p>lability asic urces</p> <p>ptability</p>	<p>[This aspect will be assessed in Part 5 of the strategy. However, it will also be reflected in the respondents' use of health care practitioners (4.4.5) and the health care facility in the workplace (3.6.4), if it is provided.]</p> <p>[To be assessed in Part 5 of the strategy, as well as from the use of the health care facility in the workplace (3.6.4).]</p> <p>[This will also be established in Part 5 of the strategy. In addition, the questions relating to the use of health care practitioners (4.4.5) will provide information on the personnel in the health care system in the community.]</p> <p>[Again, this will be identified in Part 5 of the strategy. To a certain extent, acceptability of the available health care and personnel with regard to its adequacy as judged by the respondents has a bearing on this aspect.]</p> <p>Are you usually satisfied with the outcome?</p> <ol style="list-style-type: none"> <li>1. yes</li> <li>2. no</li> </ol> <p>If no, please explain why you are dissatisfied:</p> <p>[The previous two questions relate to the consultation of doctors and will indicate the acceptability of the care provided, as could the question asking them why they consult this particular doctor (4.4.5). Data from the questions on health care provided in the organisation and possible need for additional services (3.6.4) could also be useful.</p>	<p>Use of the health care system: consul- tation of doctors</p> <p>Use of the health care system: consul- tation of doctors</p>	<p>Int.</p> <p>Int.</p>		



<p>Similarly, the reason for women not seeking antenatal care may be due to the unacceptability of services (4.4.5). Part 5 of the strategy will also consider the acceptability of health care.]</p> <p>ssibility [Part 5 of the strategy will examine the accessibility of health care services. In addition, a number of questions in the survey investigate this issue as shown below.]</p> <p>ii. where you go for this check-up</p> <p>Where do you have to go to see this doctor?</p> <p>ii. where you went for this care [4.4.5]</p> <p>[The preceding three questions indicate the distance to be travelled by the respondent in order to obtain health care.]</p> <p>[The influence of the cost of health care on accessibility is identified from the questions on the cost of hospitalisation (3.6.1), the reason for not seeking antenatal care (4.4.5), and membership of a medical aid scheme (3.6.1), as well as the following question.]</p> <p>How much does it cost you for a consultation (personal and medical aid cost)?</p> <p>How long do you usually have to wait to go in once you have arrived there?</p> <p>Is it usually convenient for you to visit this doctor?</p> <p>1. yes 2. sometimes 3. no</p> <p>If no, please explain why it is inconvenient:</p> <p>[The previous three questions will indicate the time involved in seeking care and hence its accessibility, as could the question concerning the ease in seeing a health professional during working hours (3.3.2).]</p> <p>[A number of other items may yield data which pertains to the accessibility of health care. These include the desire to consult a doctor in relation to a health problem in the previous two weeks and the reason for not doing so (4.4.5), why the respondent uses particular doctors (4.4.5), reasons for not seeking antenatal care (4.4.5), the adequacy of current resources for improving health status and what additional resources may be needed (4.1.2), the reasons for using the health care provided by the organisation and the need for additional services in this setting (3.6.4).]</p>	<p>Current health status</p> <p>Use of the health care system: consultation of doctors</p> <p>Use of the health care system: antenatal care</p> <p>Use of the health care system: consultation of doctors</p> <p>Use of the health care system: consultation of doctors</p> <p>Use of the health care system: consultation of doctors</p> <p>Use of the health care system: consultation of doctors</p>	<p>Int.</p> <p>Int.</p> <p>Int.</p> <p>Int.</p> <p>Int.</p> <p>Int.</p> <p>Int.</p>	<p>If sometimes or no, please explain why it is inconvenient:</p>	
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